Strait of Georgia and Northern Vancouver Island Sport Fishery Creel Survey Statistics for Salmon and Groundfish, 2001

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STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY CREEL SURVEY STATISTICS FOR SALMON AND GROUNDFISH, 2001

by

D.C. Hardie, D.A. Nagtegaal, K. Hein, and J. Sturhahn

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TABLE OF CONTENTS

LIST OF TABLES v

LIST OF FIGURES viii

LIST OF APPENDICES x

ABSTRACT xii

PART 1 STRAIT OF GEORGIA

INTRODUCTION 1
BACKGROUND 1
OBJECTIVES 3

METHODS 3
STUDY DESIGN 3
DATA COLLECTION 4
Angler Interviews 4
Aerial Overflights and vessel counts 5
DATA ANALYSIS 6

RESULTS AND DISCUSSION 7
DISTRIBUTION OF SAMPLING EFFORT 7
SPORT FISHING EFFORT AND CATCH 7
Salmon 8
Groundfish 9
BIOLOGICAL DATA 11
Percentage and Catch of Adipose-Clipped Chinook and Coho 11
Catch-At-Age for Chinook 11
Mean Length-At-Age for Chinook 12
Length Frequency Distribution for Coho 13

SUMMARY 14

PART 2 NORTHERN VANCOUVER ISLAND 15

INTRODUCTION 16
BACKGROUND 16
OBJECTIVES 16

METHODS 17
STUDY DESIGN 17
DATA COLLECTION 17

Angler Interviews 17

TABLE OF CONTENTS (Cont'd)

Aerial Overflights 18

DATA ANALYSIS 18

RESULTS AND DISCUSSION 18
DISTRIBUTION OF SAMPLING EFFORT 18
SPORT FISHING EFFORT AND CATCH 19
Salmon 19
Groundfish 20
BIOLOGICAL DATA 21
Percentage and Catch of Adipose-clipped
Chinook and Coho 21
Catch at Age for Chinook 21
Mean Length -At-Age for Chinook 21

SUMMARY 22

ACKNOWLEDGMENTS 23

REFERENCES 23

TABLES 25

FIGURES 55

APPENDICES 77

LIST OF TABLES

Table

1. Number of fishing interviews by month and Statistical Area and number of overflights by month for Northern Vancouver Island and the Strait of Georgia Creel surveys, 2001. 26

2. Tidal effort estimates and sport catches for the Strait of Georgia, 1983 to 2001. 27

3. Salmon catches and effort by species and month for the Strait of Georgia, 2001. 28

4. Salmon catches and effort by species and Statistical Area for the Strait of Georgia, 2001. 29

5. Coho catches, releases and effort by month for the Strait of Georgia, 2001. 30

6. Coho catches, releases and effort by Statistical Area for the Strait of Georgia, 2001. 31

7. Groundfish catches and effort by species and month for the Strait of Georgia, 2001. 32

8. Groundfish catches and effort by species and Statistical Area for the Strait of Georgia, 2001. 33

9. Rockfish catches and effort by species and month for the Strait of Georgia, 2001. 34

10. Rockfish catches and effort by species and Statistical Area for the Strait of Georgia, 2001. 35

11. Rockfish released and effort by species and month for the Strait of Georgia, 2001. 36

12. Rockfish released and effort by species and Statistical Area for the Strait of Georgia, 2001. 37

13. Monthly CPUE (catches per boat trip) by species for the Strait of Georgia, 2001. 38

14. Number of adipose-clipped chinook observed by month and Region for the Strait of Georgia, 2001. 39

LIST OF TABLES (cont'd)

15. Monthly estimated catches of adipose-clipped chinook by Region for the Strait of Georgia, 2001. 40

16. Monthly number of adipose-clipped coho observed by Region for the Strait of Georgia, 2001. 41

17. Monthly estimated catches of adipose-clipped coho by Region for the Strait of Georgia, 2001. 42

18. Origin of coded-wire tagged chinook caught in the Strait of Georgia, 2001. 43

19. Monthly number and percent age composition of chinook sampled for age in the Strait of Georgia Creel Survey, 2001. 44

20. Monthly estimated catches at age of chinook for the Strait of Georgia, 2001. 45

21. Monthly mean nose-fork length (L) at age of chinook sampled in the Strait of Georgia Creel Survey, 2001. 46

22. Tidal effort estimates and sport catches for Northern Vancouver Island, 1998, 1999, 2000 and 2001. 47

23. Salmon catches and effort by species and month for Northern Vancouver Island, 2001. 48

24. Salmon catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001. 48

25. Coho catches, releases and effort by month for Northern Vancouver Island, 2001. 49

26. Coho catches, released and effort by Statistical Sub-Area for Northern Vancouver Island, 2001. 49

27. Groundfish catches and effort by species and month for Northern Vancouver Island, 2001. 50

28. Groundfish catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001. 50

29. Rockfish catches and effort by species and month for Northern Vancouver Island, 2001. 51

LIST OF TABLES (cont'd)

30. Rockfish catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001. 51

31. Rockfish released and effort by species and month for Northern Vancouver Island, 2001. 52

32. Rockfish released and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001. 52

33. Monthly CPUE (catches per boat trip) by species for Northern Vancouver Island, 2001. 53

34. Monthly number of adipose-clipped chinook observed for Northern Vancouver Island, 2001. 54

35. Monthly estimated catches of adipose-clipped chinook for Northern Vancouver Island, 2001. 54

LIST OF FIGURES

Figure

1. Strait of Georgia creel survey study area and landing site locations, 2001. 56

2. Strait of Georgia and Northern Vancouver Island interview form for 2001 57

3. Overflight routes for the Strait of Georgia, 2001. 58

4. Comparison of monthly total fishing effort and monthly fishing interviews, Strait of Georgia, 2001. 59

5. Tidal effort (boat trips) statistics and sport catches of chinook and coho salmon for the Strait of Georgia, 1983 to 2001. 60

6. Monthly fishing effort estimates (boat trips) for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the 5 year avg. for 1994 to 1998. 61

7. Monthly chinook catches for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the 5 year avg. for 1994 to 1998. 62

8. Monthly chinook catches per boat trip for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the 5 year avg. for 1994 to 1998. 62

9. Annual sport catches of chinook and coho salmon by Statistical Area in the Strait of Georgia, 1994-1998 avg., 1999, 2000 and 2001. 63

10. Monthly coho catches for the Strait of Georgia sport fishery, for 1994-1998 avg., 1999, 2000 and 2001. 64

11. Monthly coho catches per boat trip for the Strait of Georgia sport fishery, for 1994-1998 avg., 1999, 2000 and 2001. 64

12. Monthly chum catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 65

13. Monthly pink catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 65

14. Monthly sockeye catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 76

LIST OF FIGURES (cont'd)

15. Total salmon landed and total fishing effort expended by Statistical Area in the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 67

16. Monthly rockfish catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 68

17. Monthly rockfish catches per boat trip for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001. 68

18. Monthly percent age composition of chinook salmon sampled in the Strait of Georgia Creel Survey, 2001. 69

19. Length frequency distribution of chinook salmon sampled in the Strait of Georgia Creel Survey, 2001. 70

20. Length frequency distribution of coho salmon sampled in the Strait of Georgia Creel Survey, 2001. 71

21. Statistical sub area map for the Northern Vancouver Island creel survey. 72

22. Comparison of monthly total fishing effort and monthly fishing interviews, Northern Vancouver Island, 2001. 73

23. Northern Vancouver Island overflight routes, 2001. 74

24. Total salmon catch and effort (boat trips) by month for Northern Vancouver Island, 2001. 75

25. Comparison of monthly salmon catch between major target species in the Northern Vancouver Island sport fishery, 2001. 75

26. Length frequency distribution of chinook salmon sampled in the Northern Vancouver Island Creel Survey, 2001. 76

LIST OF APPENDICES

Appendix

A. PREVIOUS STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND CREEL SURVEY REPORTS. 78

B. STRAIT OF GEORGIA CREEL SURVEY STUDY AREA. 80

C. METHODS AND EQUATIONS USED IN ANALYSIS OF CATCH AND EFFORT STATISTICS FOR THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY CREEL SURVEY. 81

D-1. STRAIT OF GEORGIA FISHING EFFORT (NUMBER OF BOAT TRIPS) SUMMARY, 2001. 89

D-2. STRAIT OF GEORGIA CHINOOK CATCH SUMMARY, 2001. 90

D-3. STRAIT OF GEORGIA ADIPOSE-CLIPPED COHO CATCH SUMMARY, 2001. 91

D-4. STRAIT OF GEORGIA CHUM CATCH SUMMARY, 2001. 92

D-5. STRAIT OF GEORGIA PINK CATCH SUMMARY, 2001. 93

D-6. STRAIT OF GEORGIA SOCKEYE CATCH SUMMARY, 2001. 94

D-7. STRAIT OF GEORGIA CATCH SUMMARY FOR TOTAL SALMONIDS, 2001. 95

D-8. STRAIT OF GEORGIA SUMMARY FOR TOTAL RELEASED SALMONIDS, 2001. 96

D-9. STRAIT OF GEORGIA HALIBUT CATCH SUMMARY, 2001. 97

D-10. STRAIT OF GEORGIA LINGCOD CATCH SUMMARY, 2001. 98

D-11. STRAIT OF GEORGIA ROCKFISH CATCH SUMMARY, 2001 99

E-1. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR THE STRAIT OF GEORGIA. 100

LIST OF APPENDICES (cont'd)

E-2. TIDAL EFFORT STATISTICS AND SPORT CATCH ESTIMATES OF CHINOOK AND COHO FOR THE STRAIT OF GEORGIA, 1960 TO 1982. 101

E-3. STRAIT OF GEORGIA HISTORICAL CATCH AND EFFORT GRAPH, 1960 TO 1982. 102

F HISTORICAL REGULATION CHANGES AFFECTING THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY 103

G SPECIES BREAK DOWN OF FISH COMMONLY INCLUDED WITH GROUNDFISH 104

H. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR NORTHERN VANCOUVER ISLAND. 105

I. SALMON CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2001. 106

J. GROUNDFISH CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2001. 107

ABSTRACT

Hardie, D.C., D.A. Nagtegaal, K. Hein, and J. Sturhahn. 2003. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2001. Can. Manuscr. Rep. Fish. Aquat. Sci. 2640: 107 p.

This report documents the 2001 catch and effort estimates for the Strait of Georgia and Northern Vancouver Island sport fishery creel surveys. Catch and effort statistics for the Strait of Georgia and Northern Vancouver Island tidal sport fishery are presented for each month, Statistical Area and by individual species. Strait of Georgia creel survey data collection began in 1980 and continues today. Historical data are presented from as far back as 1960 and comparisons are made between the current and these historical data to determine trends in catch and effort.

The 2001 Strait of Georgia statistics for Statistical Areas 13, 14, 15, 16, 17, 18, 19, 28 and 29, were derived from 11,390 fishing interviews and 88 aerial surveys. For the entire year 2001 anglers conducted an estimated 197,914 boat trips and kept 48,970 chinook, 14,104 coho, 4,558 chum, 117,302 pink, 3,219 sockeye salmon, as well as 338 halibut, 8,598 lingcod and 65,004 rockfish. Catch and effort for 2001 increased by 18% from 2000 and total salmon catch also increased from 49,752 to 179,368 in 2001. Historically, effort has dropped from a high of 664,517 boat trips in 1988 and chinook catch has dropped from a high of 369,445 in 1984. Total salmon catch per boat trip has increased from 0.33 in 2000 to 0.96 in 2001. Chinook catch also increased 60% from 28,226 to 45,113 for the same period in 2000. Among salmon examined for adipose-clips, 8.7% of chinook and 89% of coho had adipose fin clips. The chinook catch consisted of 1.4% age 2 fish, 59.0% age 3 fish, 32.8% age 4 and 4.1% age 5. The length frequency distributions of the chinook and coho are also given.

The 2001 Northern Vancouver Island statistics for Statistical Area 12, were derived from 695 fishing interviews and 14 aerial surveys. Anglers conducted an estimated 10,825 boat trips and kept 3,759 chinook, 126 coho, 59 chum, 11,967 pink, 43 sockeye salmon, as well as 819 halibut, 977 lingcod and 5,654 rockfish. The effort for 2001 showed a decrease of 32% from 15,934 boat trips in 2000. Total salmon catch also decreased 45% from 29,172 in 2000. Total salmon catch per boat trip has decreased from 1.83 in 2000 to 1.47 in 2001. Among chinook salmon examined for adipose-clips, 3.8% had adipose fin clips. The age composition of chinook catch consisted of 33.7% age 3 fish and 66.3% age 4 (only a total of 23 chinook were aged in 2001). The length frequency distributions of the chinook and coho are also given.

RÉSUMÉ

Hardie, D.C., D.A. Nagtegaal, K. Hein, and J. Sturhahn. 2003. Strait of Georgia and Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 2001. Can. Manuscr. Rep. Fish. Aquat. Sci. 2640: 107 p.

Ce rapport présente les captures et l'effort de pêche estimés à partir des relevés de la pêche sportive pour le détroit de Géorgie et le nord de l'île de Vancouver en 2000. Les statistiques sur la pêche sportive dans les eaux à marée de ces deux régions sont présentées par mois, par zone statistique et par espèce. La collecte de ces données pour le détroit de Géorgie a débuté en 1980 et se poursuit encore. Des données remontant jusqu'à 1960 sont présentées et comparées aux données actuelles pour déterminer l'évolution des captures et de l'effort de pêche.

Les statistiques de l'an 2000 pour les zones statistiques 13, 14, 15, 16, 17, 18, 19, 28 et 29 du détroit de Géorgie ont été obtenues à partir de 13 480 entrevues de pêcheurs et de 47 relevés aériens. On estime qu'au cours de l'année 2000, les pêcheurs sportifs ont effectué 170 798 sorties en bateau et ont gardé 32 750 saumons quinnats, 4 678 saumons cohos, 2 558 saumons kétas, 9 771 saumons roses, 6 367 saumons rouges, 543 flétans, 6 127 morues-lingues et 54 881 sébastes. Les données de captures et d'effort de pêche en 2000 montrent que la tendance à la baisse se poursuit : par rapport aux chiffres de 1999, l'effort de pêche a fléchi de 1,8 % (de 161 316 à 158 404) et les prises totales de saumon ont diminué de 31 % (de 71 614 à 49 752). L'effort de pêche avait atteint un sommet de 664 517 sorties en bateau en 1988, tandis que le nombre de saumons quinnats capturés annuellement avait atteint un maximum de 369 445 en 1984. Les prises totales de saumon par sortie en bateau ont baissé de 0,47 en 1999 à 0,33 en 2000. Les prises de saumon quinnat ont diminué de 35 %, soit de 43 559 en 1999 à 28 226 pour la même période en 2000. Quant aux saumons examinés pour voir s'ils étaient marqués, 6,8 % des saumons quinnats et 86 % des saumons cohos avaient la nageoire adipeuse coupée. Les prises de saumon quinnat était constituées de 2,2 % de poissons de 2 ans, de 56,6 % de poissons de 3 ans, de 35,0 % de poissons de 4 ans et de 6,2 % de poissons de 5 ans. La distribution de la fréquence des longueurs est également présentée pour les saumons quinnat et coho.

Les statistiques de l'an 2000 pour la zone statistique 12, qui couvre le nord de l'île de Vancouver, ont été obtenues à partir de 1 862 entrevues de pêcheurs et de 10 relevés aériens. On estime qu'au cours de l'année 2000, les pêcheurs à la ligne ont effectué 15 934 sorties en bateau et ont gardé 4 628 saumons quinnats, 125 saumons cohos, 103 saumons kétas, 23 519 saumons roses, 744 saumons rouges, 1 524 flétans, 1 066 morues-lingues et 8 959 sébastes. En 2000, l'effort de pêche a baissé de 51 % par rapport aux 32 443 sorties en bateau effectuées en 1999. Les prises de saumon totales ont également baissé, de 44 % par rapport aux 52 227 saumons capturés en 1999. Par contre, les prises totales de saumon par sortie en bateau ont augmenté de 1,60 en 1999 à 1,83 en

2000. Des saumons quinnats examinés pour voir s'ils étaient marqués, 2,1 % avaient la nageoire adipeuse coupée. Les prises de saumon quinnat était constituées de 28,0 % de poissons de 3 ans, de 57,1 % de poissons de 4 ans et de 14,8 % de poissons de 5 ans ou plus. La distribution de la fréquence des longueurs est également présentée pour les saumons quinnat et coho.

PART 1

STRAIT OF GEORGIA

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INTRODUCTION

Part 1 of this report documents the 2001 catch and effort statistics for the Strait of Georgia sport fishery and presents the methodology for collecting these data. Data are presented in tables and graphs with catch and effort dating back to 1960. The 2001 catch and effort are displayed in tables by month, Statistical Area and species. Graphs showing historical trends and comparisons in catch and effort for 94-98 average, 1999, 2000 and 2001 are also provided. The 2001 report is one of a series of annual reports documenting the activities of the creel survey and providing official Strait of Georgia tidal sport fishery catch statistics. A list of previous reports in this series may be found in Appendix A. In this report all tables, figures and appendices are located at the end of text.

BACKGROUND

The Strait of Georgia fishery supports one of the most valuable recreational fisheries in British Columbia. Coded-wire tag recoveries indicate these catches consist primarily of Fraser River, Puget Sound and East Coast Vancouver Island fish stocks. There has been evidence of declining stocks since the 1970's (Argue et al. 1983). Various groups (Commercial, First Nation and Recreational) on both sides of the border depend on these stocks. There is also evidence from declining marine survival rates of salmon stocks (Cross et al. 1991; Beamish et al. 1994), that marine environmental factors may be involved.

The creel survey study area (Fig. 1, Appendix B) comprises over 5,900 km^2 of water surface area and has in excess of 2,400 km of shoreline. From its southern end near Victoria, the area extends about 290 km northwest to Campbell River and at its greatest width is about 32 km wide. Two major population centres, Vancouver and Victoria, and many smaller centres such as Nanaimo and Campbell River are located within the study area. Over 500 boat launch ramps, marinas and public wharves as well as thousands of private boat launching facilities provide access.

The recreational fishery is active throughout the year but over 85% of the effort occurs in the summer months of May to September (Collicutt and Shardlow 1993). The most sought after species in the Strait of Georgia recreational fishery are the chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon, but in recent years significant fisheries directed at pink (*O. gorbuscha*), sockeye (*O. nerka*), rockfish (*Sebastes)* and halibut (*Hippoglossus stenolepis*) have developed in certain areas.

The size of vessel, methods of fishing and terminal tackle vary widely depending on location and time of year. Vessels range from 4 m car-top boats to yachts more than 17 m in length, although most boats would be in the 5 m to 8 m range. Popular fishing methods include trolling, mooching, bucktailing and stripcasting.

Over the past three decades the recreational fishery in this area has undergone dramatic changes. Prior to 1960, the numbers of chinook and coho taken by the

commercial troll fleet was almost double that taken by sport fishermen. During the 1980's however, the situation reversed with the sport fishery taking more than triple the commercial harvest of chinook and coho. The recreational fishery is still the primary harvester of chinook and coho in the Strait of Georgia. Effort in the recreational fishery has fluctuated from about 200,000 boat trips in 1960 to peaks of 769,000 in 1980 and 600,000 in 1988 to an all time low of 162,000 boat trips in 1998.

The Creel Survey for 2001 ran from April to September in all Statistical Areas of the Strait of Georgia. Additional Creel Survey coverage was provided to Statistical Area 19 (12 months) and Areas 13 and 14 for October. For historical comparisons, the catch and effort statistics for April to September are used. The entire catch and effort statistics for the year 2000 are provided in the tables, figures and appendices.

The 2001 fishery showed an 18% increase in effort to 186,000 boat trips from 158,000 in 2000. The chinook catch climbed through the 1960's with a peak in the mid 1970's of over 400,000 pieces and a second peak of 330,000 pieces in 1984. A steady decline has occurred since, to a low of 20,000 pieces in 1998. The chinook catch fluctuates greatly between years, 44,000 in 1999, 28,000 in 2000 and 45,000 pieces in 2001. The 2001 chinook catch increased 18% from the year 2000. Although annual coho catches have varied widely, an increase from about 200,000 pieces in 1960 to over one million pieces in 1988 was recorded. A gradual decline from 1988 levels to 98,000 pieces in 1997 has followed the general decline of stocks. The 1999 coho catch was an all time low of 315 pieces; this was due, however, to a majority of areas being closed to coho retention. The coho catch continues to improve dramatically from retention of adipose-clipped only fisheries in selected areas. The 2001 coho catch increased 2969% from 4,300 to 132,000 pieces.

From 1956 to 1976, estimates of catch and effort in the sport fishery published by the Department of Fisheries and Oceans (DFO) were based on subjective assessments completed by Fishery Officers and on small-scale creel surveys. The general lack of statistical rigor and consistency associated with these methods of catch estimation as well as the rapid growth of the recreational fishery led to the initiation of the Strait of Georgia Creel Survey Pilot Program in 1980 (DPA 1982). The survey has been run continuously (with minor interruptions) since then. Although many details such as sampling locations and times are regularly updated to reflect changes in the fishery, the basic design of the survey remains similar to the pilot project conducted in 1980.

Creel survey data are used for a variety of management and reporting purposes. Catch and effort information is also used by local people (both inside and outside DFO) to monitor the fishery in their area. In addition, creel survey information is used to predict the effect of regulation changes and to measure the success of conservation actions imposed. The adipose clip information collected during the survey is supplied to the Mark Recovery Program (Kuhn et al. 1988) and used in combination with other data for exploitation rate, marine survival and stock distribution analyses.

OBJECTIVES

The specific objectives of the 2001 Strait of Georgia creel survey were:

1. To estimate the sport angler effort, catches and releases of chinook, coho, chum, pink, sockeye salmon, halibut, lingcod, rockfish and other finfish by month for Statistical Areas 13 through 19, 28 and 29.

2. To estimate the catch rate for adipose-clipped chinook and coho in the sport fishery.

3. To estimate the age composition and mean length-at-age for chinook, and the length frequency for chinook and coho.

METHODS

STUDY DESIGN

The design of the Strait of Georgia Creel Survey conducted in 2001 was similar to that used by DPA Consulting Ltd. (1982) with some modifications to the data analyses, sampling intensity, flight routes and data processing. It is comprised of two independent surveys: angler interviews and aerial overflights. Angler interviews provide data on sport fishing catch per unit effort (CPUE) and daily activity patterns. Aerial overflights provide estimates of the total sport fishing effort in the study area at the time of the aerial survey. These data are combined to provide monthly estimates of total sport fishing effort and total catch of salmon and groundfish in the sport fishery. In its simplest form, the estimated total catch is calculated by multiplying the estimated total effort by CPUE.

The fishery was stratified according to the following criteria:

1. Month. The survey operated from April through to and including September for the entire geographic area. Statistical Area 19 received 12 months of survey coverage for 2001 and Statistical Areas 13 and 14 also received additional coverage for October.

2. Geographic area. Catch and effort estimates were produced for Statistical Areas 13 through 19, 28 and 29 (Fig. 1, Appendix B).

3. Day type. Weekend and mid-week days were considered independently because sport fishing activity is known to differ for the two types of days.

4. Time of day. Sampling shifts (one shift is a set number of consecutive hours of interviewing anglers at one site by one creel surveyor) were conducted during set time periods. From April to October sampling was conducted during either an

early shift (approximately 0700 to 1500 hours) or a late day shift (approximately 1500 to 2300 hours).

5. Guided versus unguided anglers. Certain sites are known to have considerable guided fishing effort. Unpublished data from previous surveys in this series indicate that the CPUE from guided boats differs markedly from unguided boats. Guided vs. unguided, was documented by the interviewer, however, at this time the catch estimate program does not generate catch and effort estimates differently for the two types.

In each region, various landing sites were chosen as locations for surveyors to conduct interviews. Site selection was based on four criteria: representativeness, traffic volume, site accessibility and adequate observation points. Discussions with local fishers, marina operators and Fisheries Officers and data from previous surveys were used to choose sites that were representative of the local sport fishing activity (i.e. sites which were used by a wide cross-section of anglers). Sites with expected traffic volumes of more than 15 boats per day in the summer were considered as possible sampling locations. Expected traffic volumes for sites were compiled from previous surveys or from discussions with marina operators or local Fisheries Officers.

Site accessibility refers to whether an interviewer can easily reach a site by car or ferry during the defined shift hours. Only sites with good accessibility were selected. As a result, landing sites on most of the islands in the Strait of Georgia were excluded from the survey. This was not expected to be a major factor, however, since most of the fishing occurs from accessible sites. The final criterion, adequate observation points, was essential for interviewers to obtain an accurate count of all boats returning to a landing site. At some large marinas, two sampling sites were identified if it was impossible to see all boats returning from a single site.

Allocation of sampling effort among months followed the same general pattern as fishing effort, that is, more effort was allocated during the summer when fishing effort is at its highest. Allocation of sampling effort among regions (groups of Statistical Areas) also followed fishing effort patterns. Within each month, each chosen site was allocated between 6 and 11 shifts. These shifts were divided equally among weekend and mid-week days and early and late daily time periods.

Fisheries and Oceans Canada conducted data collection, preliminary processing and conducted the estimation of catch and effort statistics.

DATA COLLECTION

Angler Interviews

Surveyors were stationed at access points for scheduled shifts to interview anglers as they returned from fishing. The number of boats returning to a site during a shift as

well as the number of interviews attempted and completed were recorded on a tally sheet. For each boating party landing, the following information was recorded on an interview form (Fig. 2):

1. Total number of licensed anglers in the boat.
2. Time of landing.
3. Whether the party had been sport fishing and whether guided or not guided.
4. Residency of anglers.
5. Time of departure and length of trip.
6. Time during which fishing lines were in the water.
7. Average number of lines in the water.
8. Catch Summary: -Total number and species of kept and released fish for each of the sub-Statistical Areas (possible to record for three separate sub-Statistical Areas).
   -Number of hours spent fishing, type of fishing conducted and primary fishing location in each sub-Statistical Area.
9. Coded wire tag information for chinook and coho.
10. Number of hours directed at each species.
11. Loss of catch to seals or sea lions.
12. Shellfish catch summary (New for 2000)

Interviewers trained in fish identification inspected each boating party's catch. Landed chinook and coho were checked for a missing adipose fin, which indicates the presence of a coded-wire tag, embedded in the fish's nose cartilage. In addition, scale samples for age determination and measurements of nose-fork length were taken during every sampling shift. Five scales were removed from the INPFC (International North Pacific Fisheries Commission) preferred area of each biosampled chinook (Mosher 1968).

In 2001, interviews were conducted each month at a maximum of 38 of the 50 designated landing sites (boat ramps, marinas, or resorts, Fig. 1) representative of the sport fishing activity in the survey area. Targets of desired precision and number of surveyors available dictated the number of sites selected in each area. For each area - day type - work block stratum, sampling shifts at a site were chosen on a near random basis from the total number of shifts available. For definition of the above terms (day type, work block, shift) see Appendix C.

Aerial Overflights and vessel counts

April through to and including October aerial surveys were conducted by J. O. Thomas in conjunction with Transport Canada from airplanes travelling along pre-defined routes (Fig. 3). This allowed observers to count vessels actively sport fishing throughout the Strait of Georgia. Planes flew at an altitude of 150-210 m (500-700 feet) to facilitate a broad range of vision and still allow easy identification of vessel type. Each plane carried one observer; the observer counted sport fishing boats in the flight

path. The counts of sport fishing boats for the Victoria (Statistical Area 19) creel survey for January, February, March, November and December were conducted by DFO. These counts were conducted from a boat travelling along a predefined route through Area 19.

The flight and boat path and time of departure were designed to cover major concentrations of sport fishing activity at peak periods. To maximise precision, the observers in the airplanes and boat avoided times during which fishing effort was rapidly changing. The number of overflights and boat runs each month was governed by budget constraints, targets of desired precision and by the expected number of interviews from a given number of sampling shifts (English et al. 1986). The days for overflights and boat runs during a month were randomly selected for each day type (weekday and weekend).

DATA ANALYSIS

Data analysis included calculation of catch and effort statistics, calculation of variance of total fishing effort and catch, estimation of marked chinook and coho salmon, estimation of age and length composition of chinook catch and length frequency distribution of coho. See Appendix C for established methods and equations used to analyse the above data.

To provide more accurate catch and effort estimates the computer analysis program was altered in 2001.

The initial creel survey catch estimate analysis program was based on the landing site. A mean catch per unit effort (CPUE) estimate for a landing group was based on data from several nearby landing sites. The CPUE estimates were then matched to the sub-area using information on the sub-areas fished by anglers returning to the landing sites within the landing group.

The new analysis program uses sub-area specific CPUE estimates to compute catch estimates for each sub-area. That is the actual catch and effort from fishing events within the statistical sub-area are used to generate the estimates. The combination of sub-area CPUE estimates and sub-area effort estimates is a more accurate and simpler analysis approach (English 2000).

An additional change to the analysis program is the removal of factors used to weight the CPUE estimates for each landing site to account for the portion of boat trips interviewed and the number of interview shifts per work block. The number of boat trips that include fishing activity for a specific sub-area, the similarity in CPUE between adjacent sub-areas, and obtaining a large representative sample from each of the major fishing areas are the most important factors of the new method. Some formulas used to estimate the standard errors for CPUE and total catch have changed (Appendix C, formulas 1, 2, 3 and 4).

RESULTS AND DISCUSSION

DISTRIBUTION OF SAMPLING EFFORT

A total of 11,390 interviews with anglers, and 88 overflights were conducted in 2001 (Table 1). The monthly distribution of interviews generally reflected the monthly distribution of fishing effort (number of boat trips, Table 3, Fig. 4). The total interviews represent 5.8% of the estimated total fishing effort for the entire study area (197,914 boat trips, Table 3). The interviews involving actively fishing anglers represent 5.7% of the total fishing effort and ranged in each Statistical Area from lows of 1.9% in Area 15 and 4.0% in Area 29 to highs of 7.0% in Area 13 and 6.2% in Area 19 (Tables 1 and 4). For the 2001 Creel Survey Statistical Areas 13, 14, 15, 16, 17, 28 and 29 received coverage for April through to and including September while Statistical Area 19 received 12 months of coverage, and Statistical Areas 13 and 14 received additional coverage through October (Table 1).

SPORT FISHING EFFORT AND CATCH

For comparisons to 2000 catch and effort estimates only the estimates from April to September will be discussed. The total 2001 Strait of Georgia sport fishing catch and effort statistics are summarised for each species by month (Tables 3, 5, 7, 9 and 11) and by Statistical Area (Tables 4, 6, 8, 10 and 12). Fishing effort and catch statistics by species are presented for each combination of month and Statistical Area (Appendices D-1 to D-11).

Anglers made 186,460 boat trips during 2001; this is an 18% increase in effort from 2000 (158,404). The estimated effort in 2001 shows yearly fluctuations in angler effort (Fig. 5). The fishing effort followed the same general seasonal pattern as seen in previous years where effort levels climbed steadily from April, peaked in August and declined in September and October (Table 3, Fig. 6).

The total finfish sport catch in the Strait of Georgia was estimated at 288,960 pieces (including steelhead and cutthroat trout) and consisted of 62% (179,368) salmon, 16% (47,202) groundfish and 22% (62,245) rockfish (Tables 3, 7 and 9). Anglers released an additional 255,430 salmon of mixed species (Tables 2 and 3, Appendix D-8).

The major regulation changes, which affected the 2001 sport fishery were:

1. Aug 1, 2001 Statistical Areas 13 and 14 were opened for the retention of adipose-clipped coho.

2. Non-retention of coho in all B. C. tidal and non- tidal waters was enforced with the exceptions of a few selected terminal adipose-clipped (hatchery) fisheries such as the mouth of the Capilano River (Statistical Area 28), a portion of Sechelt Inlet (Area

16), the Big Qualicum River (Area 14) and Sooke (Area 19). Coho daily limits were two with a possession limit of four; minimum size was 41 cm.

General regulations included a minimum size limit for chinook of 62 cm, with a daily limit of two, possession of four, and an annual limit of 15 for the Strait of Georgia (Cape Sutil to Cadboro Bay). In a portion of Statistical Area 19 (Cadboro Bay to Sheringham Pt.), the minimum size limit for chinook was 45 cm, with a daily limit of two, possession of four, and an annual limit of 20. Only barbless hooks could be used when angling for salmon. See Appendix G for a historical synopsis of regulation changes.

Salmon

Salmon sport catches for the Strait of Georgia in 2001 totalled 179,368 pieces (April to September) and 188,479 for the entire creel period (Tables 2 and 3). The catch consisted of 26% chinook, 7% coho, 2% chum, 62% pink and 2% sockeye.

In 2001, anglers kept 45,113 chinook (Table 3) compared to 28,226 in 2000 and 43,559 in 1999 (Table 2, Fig. 5). The chinook catch has fluctuated greatly for the last few years. The 1999 catch showed a significant increase from 1998, the 2000 chinook catch decreased 35% from 1999 and now the 2001 catch has increased 60% from the 2000 catch. The 2001 monthly chinook catches rose steadily through June and July and peaked in August (Table 3, Fig. 7). The seasonal (April to September) average catch efficiency for chinook increased from 0.18 in 2000 to 0.24 fish per boat trip overall and peaked in the summer months at 0.26 fish per boat trip (Table 13, Fig. 8). Catch patterns were similar to those in recent years. The CPUE for salmon in Statistical Area 19 for January to March was 0.53 and for November to December it was 0.44.

The spatial distribution of chinook catch followed a similar pattern to previous years. The highest catches were taken in Area 19 (36%), Area 13 (28% of total), and Areas 14 and 17 (10%) (Table 4, Appendix D-2, Fig. 9). The CPUE was 0.32 for Area 13, 0.31 for Area 19 and 0.30 for Area 15 (Table 4, Appendix D-2). Peak catches occurred during June, July and August.

A large increase in coho catch occurred in 2001. For the period of April to the end of October the coho catch was 11,544 adipose-clipped coho and 2,563 wild coho for a total of 14,107 pieces (Tables 5 and 6, Appendix D-4). Monthly coho catches peaked in August (Table 5, Fig. 10 and 11). The increase in coho catch was due to Statistical Areas 13 and 14 opening August 1 to the retention of adipose-clipped coho. Of the adipose-clipped coho catch, 64% occurred in Area 14 and 13% in Area 13, 59% of the wild coho catch occurred in Area 19 and 22% in Area 28 (Table 6). There was no retention of wild coho in Area 19 but estimates 2,495 coho were kept, also the retention of adipose-clipped coho did not open until October yet 1,502 adipose-clipped coho were caught from July to September (Table 6).

In 2001, Strait of Georgia anglers caught 404 chum from April to September (Table 3, Fig. 12), in October an additional 4,489 chum were caught in Area 13 (Appendix D4). Also 117,120 pink (Tables 3 and 4, Fig. 13) of which 52% came from Area 13 and 41% from Area 19 and 3,219 sockeye (Tables 3 and 4, Fig. 14), where the highest catches also were from Area 13 (45%; Table 4).

The average number of salmon caught during each boat trip in 2001 increased from 0.31 in 2000 to 0.96.

Year	CPUE
1990	1.46
1991	1.18
1992	1.59
1993	2.30
1994	0.89
1995	1.07
1996	0.81
1997	1.09
1998	0.24
1999	0.44
2000	0.31
2001	0.96

In 2001, Areas 19 (29%) and 13 (21%) showed the highest effort expended with a total salmon CPUE of 1.22 and 1.99, respectively (Table 4, Fig. 15). July and August were the most successful summer months at 1.73 and 1.24 salmon per trip. October had a CPUE of 1.35 partly because of the Area 13 chum fishery which had a CPUE of 1.91 (Table 3). Statistical Area 19 had a CPUE of 0.53 for January to March and 0.44 for November and December.

There were also significant numbers of salmon caught and released in 2001. A total of 54,504 chinook and 121,437 coho for a total of 255,430 released salmon between April and September 2001 (Tables 3 and 5). Area 19 recorded the greatest number of salmon hooked and released followed by Area 13 (Tables 4 and 6 and Appendix D-8).

Groundfish

The 2001 Strait of Georgia catch consisted of 109,592 groundfish, which made up 38% of the overall catch (Tables 2 and 7).

Numbers within the "other" catch category declined dramatically, from 13,793 in 1999 to only 145 in 2001. The decline in numbers is attributed to more accurate species catch data in the field and estimates generated by the analysis program. The category of "other" catch has more accurately been placed into the total groundfish catch category.

Comparing catch estimate data from 1995 when the creel program was not as species specific to today's creel program catch estimates for 2000, total groundfish catch

has increased 100% while "other" catch has decreased 99%. Angler effort when compared for the same period shows a decline of 48% and total rockfish catch also shows a 50% decline. The species composition of the groundfish catch, based on the Tables 7 and 9 data, is as follows:

Groundfish Species	Catch	% of Total Groundfish Catch	Major Catch Area
Halibut *(Hippoglossus stenolepis)*	338	0.3%	19
Lingcod *(Ophiodon elongatus)*	8,590	8%	17
Rockfish *(Sebastes* spp.)	62,245	57%	13
Other Groundfish	38,274	35%	28
Other Finfish	145	0.1%	
Total	109,592	100%	

The majority of the groundfish catch was taken in the summer months, reflecting the high fishing effort in the summer (Tables 7 and 9; Fig. 6). Catch by Statistical Area for rockfish was highest in Area 13, 21% of total and Area 16 (19%) (Table 10). Lingcod were caught in greatest numbers in Area 17, 25% and 22% from Area 16 (Table 8), while the largest halibut catch came from Area 19 (64% of total; Table 8).

Rockfish species were identified for the entire survey area in 2001, catch and release estimates were generated for nine species (Tables 9, 10, 11 and 12). The major catches are shown below. The "other" rockfish category consists of china (*S. nebulosus*), redstripe (*S. proriger*), tiger (*S. nigrocinctus*), yellowtail (*S. flavidus*) and unidentified species.

Rockfish Species	Catch	% of Total Rockfish Catch	Major Catch Area
Black (*Sebastes melanops*)	665	1%	19
Canary (*Sebastes pinniger*)	2362	4%	14
Copper (*Sebastes caurinus*)	18968	30%	17
Quillback (*Sebastes maliger*)	28161	45%	13
Yelloweye (*Sebastes ruberrimus*)	7248	12%	16
Other (*Sebastes spp.*)	4841	8%	
Total	62245		

Along with the 62,245 rockfish harvested in 2001, an additional 42,658 rockfish were released (Table 11).

The CPUE for rockfish (Table 13, Fig. 16 and 17) was relatively constant throughout the creel survey period and averaged 0.33 fish per boat trip, while the CPUE for halibut was 0.002 and lingcod was 0.05 fish per boat trip (Table 13). The CPUE for

all non-salmon species and for total finfish during 2001 was 0.58 and 1.55, respectively (Table 13).

BIOLOGICAL DATA

Percentage and Catch of Adipose-clipped Chinook and Coho

In 2001, 2,630 chinook and 704 coho were examined for adipose-clips. Tables 14 and 16 show for chinook and coho respectively, the number of clips observed and the total fish inspected by month and region. The data were presented by Region since some Statistical Areas had insufficient numbers of fish examined for clips in some months, and those data were included with other Areas. Three Regions were defined: the Northern Gulf represented by Areas 13-16; the South Gulf represented by Areas 17, 18, 28 and 29 and the Victoria region represented by Area 19.

Among chinook examined for adipose-clips, 8.7% had clips. The observed proportion of chinook adipose-clips was 13.0% for Victoria region, 7.3% for South Gulf and 5.0% for the North Gulf (Table 14). Among coho examined, 89% had adipose clips. There was a large increase in coho catch in 2001 primarily from adipose-clipped only fisheries in Statistical Areas 13 and 14 and other select terminal areas, the high percent (89%) of adipose-clips reflects the fishery. Monthly catch estimates of adipose-clipped chinook are shown by Region in Table 15. The 2001 creel survey catch estimate program generated catches of adipose-clipped, wild and not visually checked coho by the month and Area (Tables 5, 6 and Appendix D-6).

From the Strait of Georgia fishery, a total of 596 chinook with adipose-clips were returned to the head recovery program for coded-wire tag (CWT) extraction and decoding. The CWT data show that the main contributing rivers from the United States were Friday Creek (26), Cascade River (23) and Kendall Creek (20; Table 18). Canada's main contributing rivers were the Chilliwack and Cowichan Rivers both at 58 recovered CWTs, the Big Qualicum River (27), Shuswap (26), Porteau Cove (Tenderfoot Creek) (23) and the Puntledge River (20; Table 18).

Catch-At-Age for Chinook

During 2001, 2,157 chinook were sampled for length, 360 of these chinook were also sampled for age analysis. Of this total, 339 fish were found to have accurate ages (44 samples lost to regenerated scales, marine annuli, etc.). Table 19 shows the monthly number and percent age composition of chinook sampled for age. All ages shown in this report represent the saltwater age. The age data are summarised graphically in Figure 18. The monthly age proportions were applied to the estimated monthly chinook catches to provide a breakdown by age group (Table 20).

In 2001, the chinook sport catch in the Strait of Georgia consisted primarily of age 3 fish (59.0%), followed by age 4 fish (32.8%), age 5 fish (4.1%) and age 2 fish (1.4%). Age 3 chinook dominated the catch throughout the year (Table 19, 20 and Figure 18).

	% Age Composition of Chinook				
Catch Year	2	3	4	5+	Reference
1983	57.1	25.5	14.2	3.1	Shardlow et al. (1989).
1984	21.6	67.3	9.4	1.7	Shardlow and Collicutt (1989a)
1985	6.6	70.8	20.6	2.0	Shardlow and Collicutt (1989b)
1986	10.9	44.9	40.4	3.8	Shardlow and Collicutt (1989c)
1987	7.8	62.1	25.0	5.2	Shardlow and Collicutt (1989d)
1988	26.4	35.3	35.4	2.8	Shardlow and Collicutt (1989e)
1989	3.1	83.3	10.5	3.1	Collicutt and Shardlow (1990)
1990	4.0	37.0	53.0	6.0	Hardie et al. 1999
1991	2.0	67.0	25.0	6.0	Hardie et al. 1999
1992	7.0	58.0	28.0	7.0	Hardie et al. 1999
1993	1.0	69.0	26.0	4.0	Hardie et al. 1999
1994	2.0	50.0	40.0	8.0	Hardie et al. 1999
1995	2.0	62.0	29.0	7.0	Hardie et al. 1999
1996	1.0	70.0	26.0	3.0	Hardie et al. 1999
1997	0.0	66.0	29.0	5.0	Hardie et al. 1999
1998	5.0	31.0	55.0	9.0	Hardie et al. 1999
1999	0.3	73.4	21.4	4.9	Hardie et al. 2001
2000	2.2	56.6	35.0	6.2	Hardie et al. 2002
2001	1.4	59.0	32.8	4.4	*

*Calculated from this report's yearly catch estimates

Mean Length-At-Age for Chinook

Table 21 shows the monthly mean nose-fork length at age for the 316 chinook for which both length and age data were available. Figure 19 shows the length frequency distribution for all the measured chinook. The overall mean length for age 3 fish was 687 mm and age 4 fish was 789 mm (Table 21). The largest salmon sampled (length only) was a 111 cm chinook at Discovery Marina (Area 13).

As shown below, there was a minimal increase in the percentage of sub-legal size chinook (45 cm in the Victoria area and 62 cm in the Strait of Georgia). This percentage (number of under size chinook divided by the total chinook sampled for the area) has dropped and remained low since its highest level in 1989 when the 62 cm size limit was implemented.

Sub-legal Chinook			
Year	Victoria	Strait of Georgia	Reference
1989	2%	20%	Collicutt and Shardlow, 1990
1990	0.01	10%	Collicutt and Shardlow, 1992
1991	<1%	7%	Collicutt and Shardlow, 1993
1992	0.02	2%	Hardie et al. 1999
1993	1%	2%	Hardie et al. 1999
1994	0%	2%	Hardie et al. 1999
1995	0%	3%	Hardie et al. 1999
1996	0%	1%	Hardie et al. 1999
1997	0%	2%	Hardie et al. 1999
1998	1%	6%	Hardie et al. 1999
1999	0%	<1%	Hardie et al. 2001
2000	1%	2%	Hardie et al. 2002
2001	1%	2%	This report

Length Frequency Distribution for Coho

Figure 20 shows the length frequency distribution for the 438 coho sampled in 2001. The mean size of coho in 2001 was 56.9 cm, which, as shown below is an increase in coho size from 2000.

Coho mean annual length			
Year	Mean Length	Sample Size	
1986	53.4	5354	
1987	50.5	4997	
1988	50.0	13000	
1989	49.6	6883	
1990	51.4	8959	
1991	54.2	2281	
1992	53.2	19602	92 to 97 Unpublished reports
1993	51.0	22203	
1994	53.7	5890	
1995	56.3	1672	
1996	53.0	2257	
1997	49.7	1710	
1998	49.0	60	Hardie et al. 1999
1999	58.7	51	Hardie et al. 2001
2000	53.2	186	Hardie et al. 2002
2001	56.9	438	This report

SUMMARY

A sport fishery creel survey was conducted in the Strait of Georgia in 2001 to estimate the catches of all the important recreational finfish species and the total sport fishing boat trips. In the report, data are presented by both month and Statistical Areas. Comparisons are made to previous data to determine trends in catch and effort. From the catch and effort estimates, CPUE could be calculated. These data also provide estimates of the number of chinook and coho salmon with adipose fin clips. Also the age composition of chinook and the length frequency distributions of chinook and coho are shown.

For the April to September fishing effort had dropped 76% from a high of 664,517 boat trips in 1988 to a low of 162,296 in 1998. The 2001 season has shown an increase of 18% in effort from 2000 to 186,460 boat trips. Total salmon catch increased from 49,752 to 179,368 and chinook catch also increased from 28,226 in 2000 to 45,113. Total salmon CPUE increased from 0.31 in 2000 to 0.96 in 2001.

For the entire year 2001 creel survey period (April to October plus an entire 12 months for Statistical Area 19), sport fishers made an estimated 197,914 boat trips in the Strait of Georgia. A total of 11,390 fishing parties, were interviewed at a monthly maximum of 35 landing sites in the Strait of Georgia Creel Survey area. This sampling represents approximately 5.8% of the total number of boat trips conducted by sport fishers in the Strait of Georgia in 2001. A total of 88 overflights were also conducted to take "snapshot" counts of fishing effort.

Sport fishers in the Strait of Georgia landed an estimated total yearly finfish catch of 301,819 pieces of which 62% were salmon and 38% were groundfish. The 188,479 landed salmon consisted of 48,970 chinook, 14,107 coho, 4,558 chum, 117,302 pink salmon and 3,219 sockeye salmon. Anglers released an additional 269,743 salmon of mixed species. The 113,340 landed groundfish consisted of 338 halibut, 8,598 lingcod, 65,004 rockfish, 39,243 other groundfish and 157 other finfish.

During the creel comparison period of April to September, Sport fishers in the Strait of Georgia landed an estimated total finfish catch of 288,960 pieces. The 179,368 landed salmon consisted of 45,113 chinook, 13,187 coho, 404 chum, 117,120 pink salmon and 3,219 sockeye salmon. Anglers released an additional 255,430 salmon of mixed species. The 109,592 landed groundfish consisted of 338 halibut, 8,590 lingcod, 62,245 rockfish and 145 other finfish.

Among salmon examined for adipose-clips, 8.7% of chinook and 89% of coho had adipose-clips. The majority of chinook sport catches in 2001 consisted of age 3 fish (59.0%), followed by age 4 fish (32.8%), age 5 fish (4.1%) and age 2 fish (1.4%). Of the total chinook measured in 2001, 2% were sub-legal in size. The mean yearly size of coho was 56.9 cm.

PART 2

NORTHERN VANCOUVER ISLAND

INTRODUCTION

Part 2 of this report documents the 2001 catch and effort statistics for the Northern Vancouver Island sport fishery. The Northern Vancouver Island access point creel survey follows the methodology of the Strait of Georgia creel survey for objectives, study design, data collection and data analysis. The following text in Objectives and Methods contain only the differences between the two creel surveys. A list of previous reports in this series may be found in Appendix A. In this report all tables, figures and appendices are located at the end of the text.

BACKGROUND

The study area is located on the north-eastern coast of Vancouver Island (Fig. 21), consisting of Queen Charlotte and Johnstone Straits. The area is approximately 80 km wide by 110 km long; the creel survey study area was divided into five sub-areas, 12A to 12E. The major fishing areas include Gordon Channel, Hardy Bay, Broughton Strait, Blackfish Sound, Baronet Passage, Knight Inlet, Tribune Channel, and Sutlej Channel. Statistical Sub-Area 12D was not covered in 2000 or 2001 due to the cost of an isolated access point and extended float plane over flights for boat counts. In 1999, 12D contained only 1.8% of the total effort for Area 12 and 1.5% of the total salmon catch (Hardie et al. 2001).

The 2001 creel survey was conducted during July and August. The most sought after species in the Northern Vancouver Island recreational fishery were the chinook (*Oncorhynchus tshawytscha*) and coho (*O. kisutch*) salmon, but with the closure of coho (1998), pink salmon (*O. gorbuscha*) has replaced coho as a primary target species. Significant fisheries are also directed at sockeye (*O. nerka*), rockfish (*Sebastes spp.*) and halibut (*Hippoglossus stenolepis*).

The 2001 creel survey showed a decrease in estimated fishing effort of 32%. Fishing effort of 15,934 boat trips in July and August 2000 decreased to 10,825 boat trips in 2001 for the same period. The average aerial count of boats actively fishing in August 2000 was 154 and in 2001 the count was 64. The catches also reflect the decrease in fishing effort, 3,759 chinook, 11,967 pink salmon and 819 halibut were caught and an additional 35,832 released coho (Table 22). The 2000 creel survey estimated (July and August only) 4,628 chinook, 23,519 pink, 1,524 halibut and 9,626 released coho (Hardie et al. 2002).

OBJECTIVES

The objectives of the 2001 Northern Vancouver Island creel survey are contained in Part 1 Strait of Georgia objectives.

METHODS

STUDY DESIGN

The design of the 2001 Northern Vancouver Island Creel Survey was similar to that used for the 2001 Strait of Georgia Creel Survey, with some modifications to the data analyses and sampling intensity.

The fishery was stratified according to the following criteria:

1. Month. The survey operated for July and August.

2. Geographic area. Catch and effort estimates were produced for statistical sub-areas 12A, 12B, 12C and 12E (Fig. 21).

3. Day type. Weekend and mid-week days were considered independently because sport fishing activity is known to differ for the two types of days.

4. Time of day. Sampling shifts (one shift is a set number of consecutive hours of interviewing anglers at one site by one creel surveyor) were conducted during set time periods. From June to September sampling was conducted during either an early shift (approximately 0700 to 1500 hours) or a late day shift (approximately 1500 to 2300 hours).

4. Guided versus unguided anglers. Certain sites are known to have primarily guided fishing effort. Unpublished data from previous surveys in this series confirm that the CPUE from guided boats differs markedly from unguided boats. Effort was made to document guided versus unguided; however the catch estimate program has no allowances for guided versus non-guided.

Allocation of sampling effort among months followed the same general pattern as fishing effort (Fig. 22), that is, more effort was allocated during August when fishing effort is at its highest. Shifts were divided equally among weekend and mid-week days and early and late daily time periods.

DFO conducted data collection, data entry, preliminary processing and generated estimations of the catch and effort statistics.

DATA COLLECTION

Angler Interviews

Surveyors were stationed at access points for scheduled shifts to interview anglers as they returned from fishing. Figure 2 contains the questions asked of each landing boating party.

In 2001, interviews were conducted each month at six sites, Echo Bay, Telegraph Cove, Alder Bay, the public ramp and the Quarterdeck Marina in Port Hardy and the Port McNeill ramp. For each area - day type - work block stratum, sampling shifts at a site were chosen on a near random basis from the total number of shifts available. For definition of the above terms (day type, work block, shift) see Appendix C.

Two main sources of potential bias may exist for this survey: non-representative sampling and analytical method. All of the high volume access points were identified and sampled through this survey to minimise the potential of non-representative sampling bias. Some active remote resorts (Farewell Harbour Resort, Double Bay Resort) in the Blackfish Sound area were not sampled for logistical reasons, however, the fishery in this area was represented through data collected at Telegraph Cove and Alder Bay sites. Potential bias occurs through analytical methodology when access point data cannot be highly associated with a specific sub-area (or sub-area group). For this survey access point data and sub-areas were associated using mapping analysis which indicated a very high degree of association for each site sub-area used minimising the potential for bias from this source. Fishing interviews from landings to the Quarterdeck Marina and public ramp in Port Hardy showed that 100% of the fishing activity occurred in sub-area 12A. Landings at Telegraph Cove showed 48% activity in sub-area 12C and 42% activity in sub-area 12B. Fishing activity in Alder Bay was split with 44% in sub-area 12B and 42% in sub-area 12C. Port McNeill showed 79% fishing activity from sub-area 12B and 20% in sub-area 12C. Sub-area 12E showed 88% of the fishing activity for Echo Bay.

Aerial Overflights

Aerial surveys, conducted from airplanes travelling along a pre-defined 440 km route (Fig. 23), allowed observers to count vessels actively sport fishing throughout the Northern Vancouver Island. During the creel survey period 14 flights were conducted in 2001.

DATA ANALYSIS

Methods and equations are contained in Appendix C.

RESULTS AND DISCUSSION

DISTRIBUTION OF SAMPLING EFFORT

A total of 714 interviews, of which 695 involved actively fishing anglers, and 14 overflights were conducted in 2001 (Table 1). The monthly distribution of interviews generally reflected the monthly distribution of fishing effort (Table 23, Fig. 22). The total interviews represents 6.6% of the estimated total fishing effort (10,825 boat trips)

for the entire study area (Table 22). The interviews involving actively fishing anglers represent 6.4% of the total fishing effort.

SPORT FISHING EFFORT AND CATCH

The 2001 Northern Vancouver Island sport fishing catch and effort statistics are summarised for each species by month (Tables 23, 25, 27, 29 and 31) and by Statistical Sub-Area (Tables 24, 26, 28, 30, 32). Appendix I and J give catch and effort by month and Statistical Sub-Area.

Angler effort decreased in 2001 by 32% from 15,934 boat trips in 2000, to 10,825 boat trips in 2001.

The total finfish sport catch in the Northern Vancouver Island was estimated at 24,570 pieces, including steelhead and cutthroat trout (Table 22) and consisted of 65% salmon and 35% groundfish. Anglers released an additional 46,522 salmon of mixed species.

Regulation changes introduced in 1998 and which remain in affect are:

1. Only barbless hooks were to be used when fishing for salmon, throughout the coast.
2. Non-retention of coho in all B. C. tidal and non- tidal waters was enforced with the exceptions of a few selected terminal fisheries such as the mouth of the Capilano River (Statistical Area 28), a portion of Sechelt Inlet (Area 16), the Big Qualicum River (Area 14) and Sooke (Area 19). Coho daily limits were two with a possession limit of four; minimum size was 41 cm.

General regulations included a minimum size limit for chinook of 62 cm, with a daily limit of two, possession of four, and an annual limit of 15 for the Strait of Georgia (Cape Sutil to Cadboro Bay). In a portion of Statistical Area 19 (Cadboro Bay to Sheringham Pt.), the minimum size limit for chinook was 45 cm, with a daily limit of two, possession of four, and an annual limit of 20. See appendix F for a historical synopsis of regulation changes.

Salmon

Salmon sport catches for the Northern Vancouver Island decreased 45% from 29,172 in 2000 to 15,953 pieces in 2001 (Tables 22 and 23). The catch consisted of 24% chinook and 75% pink salmon.

In 2001, anglers kept 3,759 chinook which was a 19% decrease from 2000, pink catches also decreased 49% to 11,967 from 23,519 in 2000 (Tables 23 and 24, and Fig. 25). Anglers also caught 59 chum and 43 sockeye salmon (Tables 23 and 24, and Fig. 25), coho remained closed to retention. The average catch efficiency varied, chinook

increased from 0.29 to 0.35 while pink CPUE decreased from 1.48 to 1.11 (Table 33). The average yearly CPUE decreased from 1.83 to 1.47 in 2001. August was the peak month for salmon fishing with a CPUE of 2.71 (Table 33, Figures 24 and 25).

The fishing effort was evenly distributed through Statistical Area 12 in 2001, Sub-Area 12B had 37% of angler effort, Sub-Area 12A had 34%, 12C had 29% and the remaining 1% was in Sub-Area 12E (Table 24). Sub-Area 12B contained 41% of the total salmon catch and 12A and 12B contained 30% and 25% respectively (Table 24: Appendix I).

The non-retention of coho for the 2001 sport fishing season continues to alter the catch estimates. Previously a significant coho fishery occurred in the Northern Vancouver Island with 25,873 retained in 1993 (access point survey April to the end of August). In 2001, anglers released 35,832 coho as compared to 9,626 in 2000 and 22,604 coho in 1999 (Tables 22 and 26).

Groundfish

The 2001 Northern Vancouver Island catch consisted of 8,617 groundfish, which made up 35% of the overall catch. The species composition of the groundfish catch, based on the Tables 27 and 29 data, is shown below. The category "other" groundfish consists of starry flounder (*Platichthys stellatus*), rock sole (*Lepidopsetta bilineata*), dogfish (*Squalus acanthias*), cabezon (*Scorpaenichthys marmoratus*), greenling (*Hexagrammos spp.*) and other unidentfied sole and groundfish.

Groundfish Species	Catch	% of Total Groundfish Catch	Major Catch Area
Halibut *(Hippoglossus stenolepis)*	819	10%	12A
Lingcod *(Ophiodon elongatus)*	977	11%	12A
Other Groundfish	1,167	14%	12A
Rockfish *(Sebastes* spp.)	5,654	66%	12A
	8,617		

The groundfish catch was evenly distributed between July and August (Tables 27 and 29). Catch by Statistical Sub-Area for all groundfish was highest in 12B (Tables 28 and 30 and Appendix J).

Rockfish species were identified for the entire survey area in 2001, catch and release estimates were generated for nine species (Tables 29, 30, 31 and 32). The major catches are shown below. The "other" rockfish category consists of canary (*Sebastes pinniger*), china (*S. nebulosus*), redstripe (*S. proriger*), tiger (*S. nigrocinctus*) and unidentified species.

Rockfish Species	Catch	% of Total Rockfish Catch	Major Catch Area
Black (*Sebastes melanops*)	2,035	36.0%	12B
Copper (*Sebastes caurinus*)	67	1.2%	12A
Quillback (*Sebastes maliger*)	1,911	33.8%	12A
Yelloweye (*Sebastes ruberrimus*)	728	12.9%	12A
Other (*Sebastes* spp.)	913	16.1%	12A
	5,654		

The CPUE for rockfish was relatively constant throughout the creel survey period and averaged 0.52, while the CPUE for halibut was 0.08 and lingcod was 0.09 (Table 33). The CPUE for total finfish during 2001 decreased from 2.81 to 2.27.

BIOLOGICAL DATA

Percentage and Catch of Adipose-clipped Chinook and Coho

In 2001, 317 chinook were examined for adipose-clips (Table 34). Among chinook examined, 3.8% had adipose clips. A total catch of 142 clipped chinook was estimated for Northern Vancouver Island in 2001 (Table 35).

Catch-At-Age for Chinook

During 2001, due to budgetary constraints only 35 chinook scale samples were read for age. Of these samples only 23 were aged correctly and had corresponding length measurements.

In 2001, the chinook sport catch in Northern Vancouver Island consisted of 66.3% age 4 fish (sample size 14 of 23), and 33.7% age 3 fish (9 of 23).

Mean Length-At-Age for Chinook

The yearly average size of age 3 chinook was 745 mm +/- 4.9 mm at 95% Confidence Limits (sample size 9). The average yearly size of age 4 chinook was 870 mm +/- 3.1 mm at 95% Confidence Limits (sample size of 14). Figure 27 gives the length frequency of chinook sampled for length in 2001.

The largest length sample for chinook was 117 cm taken at the Quarterdeck Marina.

SUMMARY

A sport fishery creel survey was conducted in the Northern Vancouver Island in 2001 to estimate the catches of all the important recreational finfish species and the total sport fishing boat trips. In the report, data are presented by both month and Statistical Sub-Area. From the catch and effort estimates CPUE could be calculated.

The downward trend in fishing effort and catch of the main target species was evident again in 2001. Fishing effort decreased 32% from 15,934 (2000) to 10,825 (2001). Total salmon catch also decreased by 45% from 29,172 (2000) to 10,825 in 2001.

Sport fishers made an estimated 10,825 boat trips in the Northern Vancouver Island. A total of 714 boating parties, of which 695 were actively fishing, were interviewed at six landing sites in the Northern Vancouver Island creel survey area. This sampling represents approximately 6.4% of the total number of boat trips conducted by sport fishers in the Northern Vancouver Island. A total of 14 overflights were also conducted during the creel survey period.

Sport fishers in the Northern Vancouver Island landed an estimated total finfish catch of 24,570 pieces of which 65% were salmon and 35% were groundfish. The 15,953 landed salmon consisted of 3,759 chinook, 59 chum, 11,967 pink salmon and 43 sockeye salmon. Anglers released an additional 46,522 salmon of mixed species. CPUE averaged 1.47 for salmon (all species), 0.80 for groundfish and 2.27 for total finfish. The 8,617 landed groundfish consisted of 819 halibut, 977 lingcod, 5,654 rockfish and 119 other finfish.

The age composition of chinook catch consisted of 33.7% age 3 fish and 66.3% age 4 (only a total of 23 chinook were aged in 2001). Among chinook salmon examined 3.8% had adipose clips.

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TABLES

Table 1. Number of fishing interviews by month and Statistical Area and number of overflights by month for Northern Vancouver Island and the Strait of Georgia Creel Surveys, 2001.

Month	Statistical Area 12	Area 12 Over Flights	13	14	15	16	17	18	19	28	29	S of G Total	S of G Over Flights
Jan-Mar									650			650	31
Apr			125	37		101	65	24	262	51	12	677	5
May			146	54	6	166	201	68	456	51	30	1178	5
Jun			489	262	10	177	185	52	322	92	62	1651	6
Jul	497	7	678	372	19	257	233	92	438	110	79	2278	8
Aug	198	7	877	371	15	171	276	232	775	79	69	2865	6
Sep			400	165	20	100	144	100	269	40	59	1297	4
Oct			228	65			10		113			416	11
Nov-Dec									378			378	12
Total	695	14	2943	1326	70	972	1114	568	3663	423	311	11390	88

Table 2. Tidal effort estimates and sport catches for the Strait of Georgia, 1983 to 2001. (This table uses values from April up to and including September for historical comparisons. See Appendix E-1 for total effort and catch estimates for 1982 to 2001. See Appendix E-2 for historical effort and catch estimates from 1960 to 1982).

		Salmon Catch*						Salmon Released			Groundfish Catch				
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	All Chinook	All Coho	All Salmon	Halibut	Lingcod	Rockfish	Dogfish	Other
1983	495756	150522	382905	0**	53129	0**	592546	0**	0**	633444	0**	68170	183493	4226	62662
1984	595998	333726	432535	0	10080	0	778403	0	0	575704	0	129550	144174	4552	69194
1985	576885	205113	715061	0	90498	0	1015445	0	0	639402	0	73957	121681	4336	46392
1986	523272	154807	550726	613	3138	873	710391	0	0	111346	0	67126	152391	5108	52333
1987	525047	100139	621749	682	89833	8491	822645	0	0	949611	0	60752	121297	3810	39100
1988	590389	90491	1042504	663	8692	16273	1160361	0	0	813689	0	61565	174709	3669	54775
1989	532968	103877	472627	3329	122859	13345	717364	181537	0	1090925	0	46225	176380	3504	30639
1990	497550	90768	602352	652	11549	30606	741051	187554	0	638406	0	31092	142797	2259	24622
1991	409376	101690	126852	888	248976	23401	502140	153687	0	545160	0	8116	150524	3324	17532
1992	422088	100343	571459	843	19077	6745	698645	143967	0	370783	0	5733	124339	1677	27109
1993	480747	113123	823694	1766	172713	23600	1163190	172690	0	507602	0	6756	98134	1893	30240
1994	423622	63456	278890	289	18453	14038	383031	136863	0	375805	0	6793	149668	1244	31888
1995	306849	59084	73080	1481	183859	5897	328628	109868	0	303500	0	4743	107379	1873	26686
1996	289423	89589	127890	3474	7887	2419	233469	180238	0	366379	0	3733	102818	1497	39786
1997	258280	55554	98553	481	111003	16819	285533	63951	0	375728	0	4009	85701	2528	51380
1998	158559	20536	1376	3556	6848	4474	37994	34294	20570	2340	2125	3283	81591	0**	43404
1999	161316	43559	315	791	26456	492	71614	60022	13022	101384	2489	3691	65681	0	13793
2000	158404	28226	4294	1099	9761	6367	49752	52576	35086	136661	496	6116	53320	1863	***23
2001	186460	45113	13187	404	117120	3219	179368	54504	121437	255430	338	8590	62245	1542	145

*Catch and effort estimates: 1983 to 1992 from prior annual reports (see Appendix A), 1993 to 1997 from unpublished creel survey data.

** A zero in a species column indicates that no catch estimates were generated for that species for that year.

***Other catch has dropped because of more accurate catch recording in the creel survey and more inclusive species catch estimates, other catch has been more accurately put into total groundfish, rockfish and shellfish categories.

Table 3. Salmon catches and effort by species and month for the Strait of Georgia, 2001.

Month	Value	Effort	Salmon Catch					Salmon Released					
			Chinook	Chum	Pink	Sockeye	Total Salmon	*Legal Chinook	*Sub-legal Chinook	Chum	Pink	Sockeye	Total Salmon
Jan -	Total	5061	2668	0	0	0	2668	519	4483	0	0	0	6750
Mar	STD	347	469	0	0	0	469	158	698	0	0	0	997
Apr	Total	6806	1011	0	0	0	1011	374	1280	0	31	0	2549
	STD	606	226	0	0	0	226	152	258	0	33	0	523
May	Total	6537	1635	0	0	0	1649	295	2764	0	0	0	4889
	STD	575	239	0	0	0	239	91	435	0	0	0	743
Jun	Total	42340	13180	0	219	0	13662	1798	11018	31	366	1936	34702
	STD	3465	1870	0	196	0	1912	1192	1563	32	387	1616	5697
Jul	Total	45171	11723	0	14225	926	28988	591	11164	70	2099	554	50397
	STD	1880	1026	0	2297	481	2940	150	1169	47	589	216	4975
Aug	Total	56298	12866	49	73972	2293	97611	2270	12262	63	23099	1278	111072
	STD	2682	1262	29	5059	587	6067	917	1375	44	2862	327	7706
Sep	Total	29308	4698	355	28704	0	36447	416	10272	49	11315	146	51821
	STD	1880	720	104	3649	0	4264	167	1776	35	3860	95	7017
Oct	Total	3970	122	4154	182	0	5376	0	122	123	0	0	5701
	STD	357	67	706	52	0	770	0	39	80	0	0	717
Nov -	Total	2423	1067	0	0	0	1067	393	1045	0	0	0	1862
Dec	STD	621	159	0	0	0	159	91	252	0	0	0	335
Apr to Sep	Total	186460	45113	404	117120	3219	179368	5744	48760	213	36910	3914	255430
	STD	5193	2602	108	6650	759	8210	1531	3018	80	4857	1665	12910
Yearly	Total	197914	48970	4558	117302	3219	188479	6656	54410	336	36910	3914	269743
	STD	5254	2649	714	6651	759	8261	1542	3108	113	4857	1665	12972

*Legal: The salmon was equal to or greater in length than the legal size limit, sub-legal; the salmon was less than the legal size.

Table 4. Salmon catches and effort by species and Statistical Area for the Strait of Georgia, 2001.

Area	Value	Effort	Salmon Catch					Salmon Released					
			Chinook	Chum	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Chum	Pink	Sockeye	Total Salmon
13	Total	42241	13590	4489	60674	1196	84058	344	6098	166	22621	819	66949
	STD	2627	1650	713	4660	518	5506	107	972	88	4506	292	6874
14	Total	23325	5041	16	1531	0	11684	1357	5426	101	555	11	33971
	STD	2037	1042	22	431	0	1946	893	823	57	309	14	4357
15	Total	3707	1097	13	40	0	1240	94	3777	0	13	0	5143
	STD	460	175	19	23	0	191	36	612	0	19	0	877
16	Total	16200	1757	1	90	0	1854	37	3204	0	2	0	3927
	STD	982	291	1	47	0	296	33	952	0	1	0	1029
17	Total	27241	5004	0	416	0	5999	233	8794	0	257	0	23701
	STD	1552	524	0	117	0	637	107	968	0	137	0	2102
18	Total	11933	1710	0	5577	57	7353	559	5770	0	725	68	11202
	STD	801	257	0	1146	38	1191	128	1223	0	264	34	3692
19	Total	57197	17807	39	47793	1216	69650	3908	11699	69	12620	2909	110519
	STD	3276	1574	26	4563	255	5575	1238	1496	43	1759	1637	8882
28	Total	8223	1356	0	309	0	3174	29	4429	0	44	0	7352
	STD	717	227	0	92	0	465	21	733	0	28	0	1148
29	Total	7847	1608	0	872	750	3467	95	5213	0	73	107	6979
	STD	1037	476	0	415	490	942	72	1245	0	81	83	1402
	Total	197914	48970	4558	117302	3219	188479	6656	54410	336	36910	3914	269743
	STD	5254	2649	714	6651	759	8261	1542	3108	113	4857	1665	12972

Estimates are for all months surveyed (April through to and including September for the entire geographic area, Area 19 received 12 months of survey coverage and Areas 13 and 14 additional coverage for October).

Table 5. Coho catches, releases and effort by month for the Strait of Georgia, 2001.

Month	Value	Effort	Coho Catch				Legal Released Coho				Sub-legal Released Coho			
			Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total
Jan -	Total	5061	0	0	0	0	0	0	0	0	0	0	1269	1269
Mar	STD	347	0	0	0	0	0	0	0	0	0	0	514	514
Apr	Total	6806	0	0	0	0	0	0	87	87	0	0	757	757
	STD	606	0	0	0	0	0	0	42	42	0	0	295	295
May	Total	6537	0	0	14	14	0	0	101	101	0	0	1599	1599
	STD	575	0	0	12	12	0	0	38	38	0	0	441	441
Jun	Total	42340	0	0	263	263	6109	942	6143	13194	2329	39	3604	5972
	STD	3465	0	0	239	239	2849	591	1497	3272	1277	17	818	1517
Jul	Total	45171	0	1162	936	2098	6137	2599	19531	28267	1308	897	2263	4468
	STD	1880	0	238	240	338	1134	1156	3713	4051	150	320	533	640
Aug	Total	56298	0	7246	964	8210	3629	1216	33782	38627	1287	770	3881	5938
	STD	2682	0	1134	187	1149	588	334	3469	3534	613	316	894	1129
Sep	Total	29308	0	2309	293	2602	1945	297	17953	20195	876	63	1293	2232
	STD	1880	0	459	201	501	713	117	3406	3482	562	68	485	745
Oct	Total	3970	0	827	93	920	0	51	2937	2988	0	0	526	526
	STD	357	0	177	40	181	0	30	527	528	0	0	238	238
Nov -	Total	2423	0	0	0	0	0	7	15	22	0	0	82	82
Dec	STD	621	0	0	0	0	0	7	14	16	0	0	72	72
Apr to	Total	186460	0	10717	2470	13187	17820	5054	77597	100471	5800	1769	13397	20966
Sep	STD	5193	0	1246	436	1320	3203	1346	6298	7193	1531	455	1507	2196
Yearly	Total	197914	0	11544	2563	14107	17820	5112	80549	103481	5800	1769	15274	22843
	STD	5254	0	1258	438	1333	3203	1346	6320	7212	1531	455	1611	2269

Table 6. Coho catches, releases and effort by Statistical Area for the Strait of Georgia, 2001.

Area	Value	Effort	Coho Catch				Legal Released Coho				Sub-legal Released Coho			
			Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total
13	Total	42241	0	3866	214	4080	0	1656	29140	30796	438	155	1622	2215
	STD	2627	0	509	64	513	0	601	3123	3180	169	120	461	506
14	Total	23325	0	4911	186	5097	2159	729	12434	15322	1344	323	2704	4371
	STD	2037	0	1076	88	1079	515	201	2670	2726	300	228	749	838
15	Total	3707	0	91	0	91	5	30	344	379	49	166	373	588
	STD	460	0	31	0	31	4	18	88	90	29	67	82	110
16	Total	16200	0	5	1	6	0	13	158	171	0	4	240	244
	STD	982	0	2	1	2	0	12	57	59	0	4	122	122
17	Total	27241	0	581	0	581	2760	219	4511	7490	1208	13	3178	4399
	STD	1552	0	266	0	266	512	112	1019	1146	754	14	729	1049
18	Total	11933	0	0	9	9	102	2	49	153	124	0	248	372
	STD	801	0	0	10	10	56	2	34	65	68	0	86	110
19	Total	57197	0	983	1512	2495	12794	2368	33413	48575	2637	202	4149	6988
	STD	3276	0	213	329	392	3119	1181	4689	5753	1285	173	844	1547
28	Total	8223	0	950	561	1511	0	88	355	443	0	854	1496	2350
	STD	717	0	214	259	336	0	69	162	176	0	325	599	681
29	Total	7847	0	157	80	237	0	7	145	152	0	52	1264	1316
	STD	1037	0	66	67	94	0	5	94	94	0	16	436	437
	Total	197914	0	11544	2563	14107	17820	5112	80549	103481	5800	1769	15274	22843
	STD	5254	0	1258	438	1333	3203	1346	6320	7212	1531	455	1611	2269

Estimates are for all months surveyed (April through to and including September for the entire geographic area, Area 19 received 12 months of survey coverage and Areas 13 and 14 additional coverage for October).

Table 7. Groundfish catches and effort by species and month for the Strait of Georgia, 2001.

Month		Effort	Groundfish Catch					Groundfish Released				
			Halibut	Lingcod	English sole	Other Groundfish	Total Groundfish	Halibut	Lingcod	English sole	Other Groundfish	Total Groundfish
Jan -	Total	5061	0	0	3	0	299	63	1474	5	24	1928
Mar	STD	347	0	0	1	0	134	56	387	3	30	481
Apr	Total	6806	33	0	0	156	1460	0	2813	0	419	4000
	STD	606	13	0	0	79	292	0	501	0	211	647
May	Total	6537	68	8	9	57	1832	6	2885	0	96	3673
	STD	575	44	6	7	73	455	7	473	0	43	507
Jun	Total	42340	107	2973	19	192	15175	0	20126	1	1300	31354
	STD	3465	61	442	15	98	2183	0	2129	0	205	2864
Jul	Total	45171	10	2540	0	253	10696	3	15629	0	669	35899
	STD	1880	9	455	0	125	1556	2	2966	0	225	3756
Aug	Total	56298	77	2702	6	284	11119	77	17388	0	832	34296
	STD	2682	65	499	6	133	1904	65	2797	0	295	3637
Sep	Total	29308	43	367	81	84	6920	0	5885	0	552	12374
	STD	1880	34	107	53	57	1785	0	928	0	221	1694
Oct	Total	3970	0	5	0	0	299	0	1066	0	0	1256
	STD	357	0	6	0	0	192	0	377	0	0	514
Nov -	Total	2423	0	3	3	0	379	0	1694	0	10	1798
Dec	STD	621	0	3	3	0	196	0	886	0	10	888
Apr to	Total	186460	338	8590	115	1026	47202	86	64726	1	3868	121596
Sep	STD	5193	107	814	56	240	3781	66	4742	0	524	6251
Yearly	Total	197914	338	8598	121	1026	48179	149	68960	6	3902	126578
	STD	5254	107	814	56	240	3793	87	4854	3	525	6353

No catch for Herring or Flounder for 2001.

Table 8. Groundfish catches and effort by species and Statistical Area for the Strait of Georgia, 2001.

Area	Value	Effort	Groundfish Catch					Groundfish Released				
			Halibut	Lingcod	English sole	Other Groundfish	Total Groundfish	Halibut	Lingcod	English sole	Other Groundfish	Total Groundfish
13	Total	42241	25	1462	0	62	3508	0	6997	0	164	17329
	STD	20720	21	856	0	37	1778	0	3533	0	85	7607
14	Total	23325	42	1151	0	104	2400	0	12094	0	308	18728
	STD	13096	34	949	0	62	1358	0	7311	0	189	8973
15	Total	3707	0	123	0	0	227	0	716	0	1	2861
	STD	1802	0	111	0	0	124	0	340	0	1	1220
16	Total	16200	0	1883	0	5	6048	0	8241	0	375	15933
	STD	7715	0	1087	0	5	3314	0	4669	0	274	6471
17	Total	27241	54	2134	0	171	7872	54	11956	0	1586	20098
	STD	13025	54	1272	0	138	4377	54	6184	0	1196	7640
18	Total	11933	0	566	24	154	3518	1	2419	0	1032	8149
	STD	6290	0	320	15	110	2316	1	1060	0	529	3413
19	Total	57197	217	919	97	152	8993	94	24045	1	413	36119
	STD	24101	104	568	71	152	4090	62	9829	4	267	11489
28	Total	8223	0	251	0	292	12624	0	1449	0	3	4203
	STD	3962	0	135	0	186	6329	0	765	0	3	1700
29	Total	7847	0	109	0	86	2989	0	1043	0	20	3158
	STD	3687	0	69	0	61	1604	0	518	0	14	1221
	Total	197914	338	8598	121	1026	48179	149	68960	1	3902	126578
	STD	38509	124	2212	73	313	9994	82	14989	4	1379	19701

Estimates are for all months surveyed (April through to and including September for the entire geographic area, Area 19 received 12 months of survey coverage and Areas 13 and 14 additional coverage for October).

Table 9. Rockfish catches and effort by species and month for the Strait of Georgia, 2001.

Month		Effort	Rockfish Catch									
			Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Jan -	Total	5061	0	42	306	0	318	0	0	0	0	665
Mar	STD	347	0	54	198	0	274	0	0	0	0	382
Apr	Total	6806	1	0	683	0	1435	0	0	128	0	2413
	STD	606	2	0	185	0	287	0	0	42	0	403
May	Total	6537	20	130	807	2	1362	0	14	168	0	2714
	STD	575	16	126	227	3	330	0	8	43	0	520
Jun	Total	42340	257	118	8444	0	8122	0	5	2516	0	20621
	STD	3465	199	48	1233	0	1049	0	4	405	0	2242
Jul	Total	45171	262	1351	2900	0	6090	0	0	2778	117	14338
	STD	1880	152	315	549	0	1095	0	0	974	83	2193
Aug	Total	56298	99	750	4226	10	8687	0	90	1445	25	16689
	STD	2682	46	442	783	9	1377	0	37	336	20	2136
Sep	Total	29308	26	13	1908	0	2465	64	0	213	30	5470
	STD	1880	28	13	807	0	729	37	0	112	30	1258
Oct	Total	3970	0	0	206	0	370	0	0	231	0	818
	STD	357	0	0	89	0	132	0	0	152	0	245
Nov -	Total	2423	0	0	533	0	659	0	0	0	0	1276
Dec	STD	621	0	0	467	0	575	0	0	0	0	1044
Apr to	Total	186460	665	2362	18968	12	28161	64	109	7248	172	62245
Sep	STD	5193	257	559	1782	10	2218	37	38	1114	90	4052
Yearly	Total	197914	665	2404	20013	12	29508	64	109	7479	172	65004
	STD	5254	257	562	1855	10	2311	37	38	1124	90	4209

Table 10. Rockfish catches and effort by species and Statistical Area for the Strait of Georgia, 2001.

Area	Effort	Rockfish Catch									
		Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
13 Total	42241	61	311	1394	0	9076	64	14	762	0	13130
STD	2627	44	105	402	0	1236	37	8	157	0	1731
14 Total	23325	252	1765	131	0	4479	0	2	1175	0	7934
STD	2037	150	531	57	0	1127	0	4	317	0	1740
15 Total	3707	5	0	6	4	369	0	0	562	0	946
STD	460	6	0	4	3	90	0	0	161	0	225
16 Total	16200	0	0	1034	6	7274	0	20	3710	69	12184
STD	982	0	0	327	9	1245	0	17	1030	70	2183
17 Total	27241	0	103	6866	0	3276	0	0	878	0	11689
STD	1552	0	51	1060	0	450	0	0	205	0	1452
18 Total	11933	3	0	1647	0	801	0	66	26	0	2943
STD	801	2	0	389	0	247	0	32	20	0	570
19 Total	57197	344	42	4068	2	3669	0	7	151	97	9462
STD	3276	204	54	761	3	839	0	8	65	57	1602
28 Total	8223	0	183	4118	0	110	0	0	0	0	4672
STD	717	0	132	1124	0	64	0	0	0	0	1186
29 Total	7847	0	0	749	0	454	0	0	215	6	2044
STD	1037	0	0	225	0	131	0	0	79	4	683
Total	197914	665	2404	20013	12	29508	64	109	7479	172	65004
STD	5254	257	562	1855	10	2311	37	38	1124	90	4209

Estimates are for all months surveyed (April through to and including September for the entire geographic area, Area 19 received 12 months of survey coverage and Areas 13 and 14 additional coverage for October).

Table 11. Rockfish released and effort by species and month for the Strait of Georgia, 2001.

Month		Effort	Rockfish Released									
			Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Jan -	Total	5061	12	0	0	0	4	0	0	0	0	204
Mar	STD	347	12	0	0	0	3	0	0	0	0	95
Apr	Total	6806	0	0	133	0	240	0	0	5	0	1039
	STD	606	0	0	69	0	68	0	0	5	0	209
May	Total	6537	19	0	72	0	327	0	0	13	0	1246
	STD	575	22	0	50	0	172	0	0	8	0	256
Jun	Total	42340	386	0	3893	0	2804	0	4	52	0	15908
	STD	3465	289	0	815	0	482	0	7	21	0	1696
Jul	Total	45171	0	0	2598	29	1456	0	0	82	0	11463
	STD	1880	0	0	1048	22	309	0	0	36	0	2225
Aug	Total	56298	278	0	1495	0	498	0	0	120	0	7226
	STD	2682	229	0	499	0	157	0	0	71	0	894
Sep	Total	29308	192	0	972	54	295	0	0	5	0	5776
	STD	1880	180	0	621	51	318	0	0	7	0	1128
Oct	Total	3970	0	59	0	0	0	0	0	0	0	422
	STD	357	0	61	0	0	0	0	0	0	0	103
Nov -	Total	2423	0	0	0	0	7	0	0	0	0	565
Dec	STD	621	0	0	0	0	7	0	0	0	0	402
Apr to	Total	186460	875	0	9163	83	5620	0	4	277	0	42658
Sep	STD	5193	411	0	1550	56	699	0	7	83	0	3164
Yearly	Total	197914	887	59	9163	83	5631	0	4	277	0	43849
	STD	5254	411	61	1550	56	699	0	7	83	0	3192

Table 12. Rockfish released and effort by species and Statistical Area for the Strait of Georgia, 2001.

Area		Effort	Rockfish Released									
			Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
13	Total	42241	0	0	709	0	365	0	0	15	0	3951
	STD	2627	0	0	572	0	275	0	0	13	0	843
14	Total	23325	272	0	163	0	46	0	4	137	0	3638
	STD	2037	229	0	137	0	21	0	7	76	0	807
15	Total	3707	0	0	1	0	610	0	0	12	0	733
	STD	460	0	0	1	0	330	0	0	6	0	340
16	Total	16200	6	0	362	0	1059	0	0	27	0	4933
	STD	982	3	0	284	0	307	0	0	17	0	845
17	Total	27241	0	0	5894	28	3189	0	0	70	0	18670
	STD	1552	0	0	1198	22	443	0	0	25	0	2482
18	Total	11933	10	0	415	1	200	0	0	1	0	2129
	STD	801	13	0	118	1	93	0	0	1	0	340
19	Total	57197	599	59	140	0	125	0	0	15	0	7775
	STD	3276	341	61	70	0	63	0	0	9	0	1056
28	Total	8223	0	0	1404	52	0	0	0	0	0	1582
	STD	717	0	0	723	51	0	0	0	0	0	768
29	Total	7847	0	0	75	2	37	0	0	0	0	438
	STD	1037	0	0	33	2	14	0	0	0	0	134
	Total	197914	887	59	9163	83	5631	0	4	277	0	43849
	STD	5254	411	61	1550	56	699	0	7	83	0	3192

Estimates are for all months surveyed (April through to and including September for the entire geographic area, Area 19 received 12 months of survey coverage and Areas 13 and 14 additional coverage for October).

Table 13. Monthly CPUE (catches per boat trip) by species for the Strait of Georgia, 2001*.

Month	Salmon Catch						Salmon Released			Groundfish Catch				Total Catch Success
	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	All Salmon	Halibut	Lingcod	Total Ground	Rockfish	
Jan - Mar	0.53	0.00	0.00	0.00	0.00	0.53	0.99	0.00	1.33	0.00	0.00	0.06	0.13	0.72
Apr	0.15	0.00	0.00	0.00	0.00	0.15	0.24	0.12	0.37	0.00	0.00	0.21	0.35	0.72
May	0.25	0.00	0.00	0.00	0.00	0.25	0.47	0.26	0.75	0.01	0.00	0.28	0.42	0.95
Jun	0.31	0.01	0.00	0.01	0.00	0.32	0.30	0.45	0.82	0.00	0.07	0.36	0.49	1.17
Jul	0.26	0.05	0.00	0.31	0.02	0.64	0.26	0.72	1.12	0.00	0.06	0.24	0.32	1.20
Aug	0.23	0.15	0.00	1.31	0.04	1.73	0.26	0.79	1.97	0.00	0.05	0.20	0.30	2.23
Sep	0.16	0.09	0.01	0.98	0.00	1.24	0.36	0.77	1.77	0.00	0.01	0.24	0.19	1.67
Oct	0.03	0.23	1.05	0.05	0.00	1.35	0.03	0.89	1.44	0.00	0.00	0.08	0.21	1.64
Nov - Dec	0.44	0.00	0.00	0.00	0.00	0.44	0.59	0.04	0.77	0.00	0.00	0.16	0.53	1.12
Apr-Sep	0.24	0.07	0.00	0.63	0.02	0.96	0.29	0.65	1.37	0.00	0.05	0.25	0.33	1.55
Year	0.25	0.07	0.02	0.59	0.02	0.95	0.31	0.63	1.36	0.00	0.04	0.24	0.33	1.52

- Calculated using Tables 3, 5, 7 and 9 data.

Table 14. Number of adipose-clipped chinook observed by month and Region for the Strait of Georgia, 2001.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	0	245	245
to	Marked	0	0	39	39
Mar	Total	0	0	284	284
Apr	Unmarked	16	9	50	75
Apr	Marked	2	0	5	7
Apr	Total	18	9	55	82
May	Unmarked	82	77	150	309
May	Marked	9	4	21	34
May	Total	91	81	171	343
Jun	Unmarked	239	94	73	406
Jun	Marked	14	7	7	28
Jun	Total	253	101	80	434
Jul	Unmarked	417	59	84	560
Jul	Marked	23	9	4	36
Jul	Total	440	68	88	596
Aug	Unmarked	254	51	189	494
Aug	Marked	4	4	17	25
Aug	Total	258	55	206	519
Sep	Unmarked	80	53	51	184
Sep	Marked	5	3	6	14
Sep	Total	85	56	57	198
Oct	Unmarked	3	0	7	10
Oct	Marked	0	0	1	1
Oct	Total	3	0	8	11
Nov	Unmarked	0	0	118	118
to	Marked	0	0	45	45
Dec	Total	0	0	163	163
Total	Unmarked	1091	343	967	2401
	Marked	57	27	145	229
	Total	1148	370	1112	2630
Proportion of Marks		0.050	0.073	0.130	0.087

Table 15. Monthly estimated catches of adipose-clipped chinook by Region for the Strait of Georgia, 2001*.

Month		North Gulf	South Gulf	Victoria	Total
Jan - Mar	Catch			366	366
	STD			85	85
Apr	Catch	14	0	46	139
	STD	18	0	24	30
May	Catch	45	32	66	140
	STD	20	17	22	34
Jun	Catch	240	264	440	1306
	STD	98	102	196	242
Jul	Catch	404	235	101	756
	STD	94	85	54	138
Aug	Catch	114	80	365	777
	STD	60	44	95	121
Sep	Catch	86	106	133	226
	STD	43	65	73	107
Oct	Catch	0		12	9
	STD	0		16	16
Nov - Dec	Catch			295	295
	STD			58	58
Total	Catch	903	716	1824	4014
	STD	170	143	273	352

* Calculated using data from Table 14 and Appendix D-2.

Table 16. Monthly number of adipose-clipped coho observed by Region for the Strait of Georgia, 2001.

Month		North Gulf	South Gulf	Victoria	Total
Jan	Unmarked	0	0	0	0
to	Marked	0	0	0	0
Mar	Total	0	0	0	0
Apr	Unmarked	0	0	0	0
Apr	Marked	0	0	0	0
Apr	Total	0	0	0	0
May	Unmarked	0	0	1	1
May	Marked	0	1	3	4
May	Total	0	1	4	5
Jun	Unmarked	0	0	0	0
Jun	Marked	0	8	0	8
Jun	Total	0	8	0	8
Jul	Unmarked	0	3	14	17
Jul	Marked	0	39	10	49
Jul	Total	0	42	24	66
Aug	Unmarked	5	0	34	39
Aug	Marked	243	51	14	308
Aug	Total	248	51	48	347
Sep	Unmarked	3	0	7	10
Sep	Marked	163	11	2	176
Sep	Total	166	11	9	186
Oct	Unmarked	4	0	6	10
Oct	Marked	57	0	24	81
Oct	Total	61	0	30	91
Nov	Unmarked	0	0	0	0
to	Marked	0	0	1	1
Dec	Total	0	0	1	1
Total	Unmarked	12	3	62	77
	Marked	463	110	54	627
	Total	475	113	116	704
Proportion of Marks		0.975	0.973	0.466	0.891

Region definitions: North Gulf (Areas 13, 14, 15 and 16), South Gulf (Areas 17, 18,28 and 29) and Victoria (Area 19).

Table 17. Monthly estimated catches of adipose-clipped coho by Region for the Strait of Georgia, 2001.

Month		North Gulf	South Gulf	Victoria	Total
Jan - Mar	Catch	0	0	0	0
	STD	0	0	0	0
Apr	Catch	0	0	0	0
	STD	0	0	0	0
May	Catch	0	0	0	0
	STD	0	0	0	0
Jun	Catch	0	0	0	0
	STD	0	0	0	0
Jul	Catch	4	748	410	1162
	STD	2	182	154	238
Aug	Catch	6231	706	309	7246
	STD	1096	273	94	1134
Sep	Catch	2045	234	30	2309
	STD	442	116	42	459
Oct	Catch	593	0	234	827
	STD	141	0	106	177
Nov - Dec	Catch	0	0	0	0
	STD	0	0	0	0
Total	Catch	8873	1688	983	11544
	STD	1191	348	213	1258

Region definitions: North Gulf (Areas 13, 14, 15 and 16), South Gulf (Areas 17, 18,28 and 29) and Victoria (Area 19).

Table 18. Origin of coded-wire tagged chinook caught in the Strait of Georgia, 2001 (Places of origin with less than 5 returns are totaled as Other river).

River or Creek of Origin	Country	Number	Percent
Dome Cr. (Penny)	CAN	7	1.2%
Chelhalis	CAN	8	1.3%
Oyster	CAN	9	1.5%
Inch Cr.	CAN	10	1.7%
Nanaimo	CAN	10	1.7%
Nicola (Spius Cr.)	CAN	10	1.7%
Capilano	CAN	11	1.8%
Little Qualicum	CAN	11	1.8%
Spius	CAN	11	1.8%
Tenderfoot Cr.	CAN	11	1.8%
Sooke	CAN	14	2.3%
Quinsam	CAN	16	2.7%
Stave (Inch Cr.)	CAN	18	3.0%
Puntledge	CAN	20	3.4%
Porteau Cove (Tenderfoot Cr.)	CAN	23	3.9%
Shuswap	CAN	26	4.4%
Big Qualicum	CAN	27	4.5%
Chilliwack	CAN	58	9.7%
Cowichan	CAN	58	9.7%
Other	CAN	26	4.4%
Green	USA	5	0.8%
Tulalip	USA	7	1.2%
Voight Cr.	USA	9	1.5%
Skagit	USA	11	1.8%
Big Soos	USA	15	2.5%
Wa Prod Area	USA	15	2.5%
Wallace	USA	17	2.9%
Kendall	USA	20	3.4%
Cascade	USA	23	3.9%
Friday Cr.	USA	26	4.4%
Other	USA	64	10.7%
		596	

Table 19. Monthly number and percent age composition of chinook sampled for age in the Strait of Georgia Creel Survey, 2001.

Month	Age 2 n	Age 2 %	Age 3 n	Age 3 %	Age 4 n	Age 4 %	Age 5 n	Age 5 %	Age 6 n	Age 6 %	Total Sampled
Jan-Mar	1	2.4%	30	73.2%	10	24.4%	0	0.0%	0		41
Apr	0	0.0%	12	63.2%	7	36.8%	0	0.0%	0		19
May	0	0.0%	14	63.6%	7	31.8%	1	4.5%	0		22
Jun	1	1.6%	41	64.1%	21	32.8%	1	1.6%	0		64
Jul	0	0.0%	43	65.2%	18	27.3%	5	7.6%	0		66
Aug	1	1.1%	44	46.3%	44	46.3%	5	5.3%	1	1.1%	95
Sep	2	6.3%	22	68.8%	7	21.9%	1	3.1%	0		32
Total	5		206		114		13		1		339
Overall age composition of catch*		1.4%		59.0%		32.8%		4.1%		0.3%	

* Overall age composition calculated from table 20.

Table 20. Monthly estimated catches at age of chinook for the Strait of Georgia, 2001*.

Month		Age 2	Age 3	Age 4	Age 5	Age 6	Total
Jan to Mar		65 64	1952 185	651 179	0 0	0 0	2668
Apr	Catch STD	0 0	639 112	372 112	0 0	0 0	1011
May	Catch STD	0 0	1040 168	520 162	74 73	0 0	1635
Jun	Catch STD	206 204	8443 791	4325 774	206 204	0 0	13180
Jul	Catch STD	0 0	7638 688	3197 643	888 382	0 0	11723
Aug	Catch STD	135 135	5959 658	5959 658	677 295	135 17	12866
Sep	Catch STD	294 201	3230 385	1028 343	147 145	0 0	4698
Oct	Catch STD	0 0	0 0	0 0	0 0	0 0	122
Nov to Dec							1067
Total	Catch STD	700 323	28901 1325	16052 1278	1992 548	135 17	48970
Annual Percentage		1.4%	59.0%	32.8%	4.1%	0.3%	100.0%

* Calculated by applying the total monthly chinook catch from Table 3 to the monthly age proportions from Table 19.

Table 21. Monthly mean nose-fork length (L) at age of chinook sampled in the Strait of Georgia Creel Survey, 2001.

	Age 2		Age 3		Age 4		Age 5		Age 6		Total
Month	L (mm)	n	L (mm)	n	L (mm)	n	L (mm)	n	L (mm)	n	Sampled
Jan			524	12	645	4					16
Feb			514	8	680	1					9
Mar	500	1	516	10	550	5					16
Apr			635	12	714	7					19
May			652	14	746	7	895	1			22
Jun	480	1	741	41	804	21	810	1			64
Jul			724	41	834	13	913	5			59
Aug	500	1	730	37	829	35	841	5	1010	1	79
Sep	575	2	725	22	847	7	1000	1			32
Avg.	526	5	687	197	789	100	883	13	1010	1	316

Table 22. Tidal effort estimates and sport catches for Northern Vancouver Island, 1998, 1999, 2000 and 2001. (This table uses values for July and August only for historical comparisons. See Appendix H for total effort and catch estimates for all months surveyed.)

		Salmon Catch						Released		Groundfish Catch			Total
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Halibut	Lingcod	Total Rockfish	Finfish Catch
1998	14779	2224	0	788	14983	440	18435	6364	27247	3347	911	10478	33419
1999	32443	7259	430	607	42398	1538	52227	5256	22604	6117	1575	15691	75610
2000	15934	4628	125	103	23519	744	29172	4904	9626	1524	1066	8959	44845
2001	10825	3759	126	59	11967	43	15953	6332	35832	819	977	5654	24570

Table 23. Salmon catches and effort by species and month for Northern Vancouver Island, 2001.

		Salmon Catch						Salmon Released					
Month	Value	Effort	Chinook	Chum	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Chum	Pink	Sockeye	Total Salmon
Jul	Total	6092	2500	59	481	0	3123	373	4094	8	59	85	21054
	STD	736	512	41	125	0	574	129	1547	8	45	51	3343
Aug	Total	4733	1259	0	11486	43	12830	149	1716	0	4185	15	25468
	STD	895	312	0	2376	21	2627	62	402	0	1060	12	4300
	Total	10825	3759	59	11967	43	15953	522	5810	8	4244	100	46522
	STD	1159	600	41	2379	21	2689	143	1599	8	1061	52	5447

Table 24. Salmon catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001.

		Salmon Catch						Salmon Released					
Area	Value	Effort	Chinook	Chum	Pink	Sockeye	Total Salmon	Legal Chinook	Sub-legal Chinook	Chum	Pink	Sockeye	Total Salmon
A	Total	3689	1549	0	3543	0	5159	178	3193	0	1277	67	20850
	STD	747	460	0	1466	0	1680	113	1508	0	682	47	4013
B	Total	3955	1253	46	5193	26	6544	193	1818	8	1882	27	16384
	STD	809	331	39	1738	19	1945	69	501	8	735	22	3435
C	Total	3110	938	13	3060	17	4060	149	775	0	1023	6	8908
	STD	362	196	14	701	10	791	56	179	0	345	6	1326
E	Total	71	19	0	171	0	190	2	24	0	62	0	380
	STD	0	6	0	28	0	30	2	7	0	27	0	43
	Total	10825	3759	59	11967	43	15953	522	5810	8	4244	100	46522
	STD	1159	600	41	2379	21	2689	143	1599	8	1061	52	5447

Table 25. Coho catches, releases and effort by month for Northern Vancouver Island, 2001.

Month	Value	Effort	Coho Catch				Legal Released Coho				Sub-legal Released Coho			
			Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total
Jul	Total	6092	0	34	49	83	7736	177	1344	9257	6406	0	760	7166
	STD	736	0	41	44	60	1523	121	761	1707	1804	0	447	1859
Aug	Total	4733	43	0	0	43	18494	0	0	18494	915	0	0	915
	STD	895	34	0	0	34	3685	0	0	3685	273	0	0	273
	Total	10825	43	34	49	126	26230	177	1344	27751	7321	0	760	8081
	STD	1159	34	41	44	69	3987	121	761	4061	1824	0	447	1878

Table 26. Coho catches, releases and effort by Statistical Sub-Area for Northern Vancouver Island, 2001.

Month	Value	Effort	Coho Catch				Legal Released Coho				Sub-legal Released Coho			
			Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total	Not Checked	Adipose clipped	Wild	Total
A	Total	3689	0	34	34	68	9905	101	1212	11218	4210	0	709	4919
	STD	747	0	41	41	58	2615	89	754	2723	1606	0	445	1667
B	Total	3955	26	0	0	26	10183	0	0	10183	2275	0	0	2275
	STD	809	30	0	0	30	2797	0	0	2797	843	0	0	843
C	Total	3110	17	0	15	32	5861	76	132	6069	824	0	51	875
	STD	362	17	0	15	23	1112	82	100	1119	194	0	44	199
E	Total	71	0	0	0	0	281	0	0	281	12	0	0	12
	STD	0	0	0	0	0	33	0	0	33	6	0	0	6
	Total	10825	43	34	49	126	26230	177	1344	27751	7321	0	760	8081
	STD	1159	34	41	44	69	3987	121	761	4061	1824	0	447	1878

Table 27. Groundfish catches and effort by species and month for Northern Vancouver Island, 2001.

		Groundfish Catch					Groundfish Released			
Month	Value	Effort	Halibut	Lingcod	Other Grndfish	Total Grndfish	Halibut	Lingcod	Other Grndfish	Total Grndfish
Jul	Total	6092	628	539	124	1697	191	540	0	1953
	STD	736	270	208	80	498	115	339	47	502
Aug	Total	4733	191	438	115	1126	0	812	0	1017
	STD	895	101	134	82	301	0	258	0	277
	Total	10825	819	977	239	2823	191	1352	0	2970
	STD	1159	288	247	115	582	115	426	47	574

There were zero catches of Herring, English Sole and Flounder in 2001.

Table 28. Groundfish catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001.

		Groundfish Catch					Groundfish Released			
Area	Value	Effort	Halibut	Lingcod	Other Grndfish	Total Grndfish	Halibut	Lingcod	Other Grndfish	Total Grndfish
A	Total	3689	613	514	101	1511	101	713	0	1313
	STD	747	276	212	79	499	89	375	47	479
B	Total	3955	135	311	92	903	26	394	0	982
	STD	809	76	117	72	276	22	181	0	267
C	Total	3110	68	145	46	393	64	232	0	659
	STD	362	38	50	41	114	69	89	0	166
E	Total	71	3	7	0	16	0	13	0	16
	STD	0	3	3	0	6	0	7	0	7
	Total	10825	819	977	239	2823	191	1352	0	2970
	STD	1159	288	247	115	582	115	426	47	574

* There were zero catches of Herring, English Sole and Flounder in 2001.

Table 29. Rockfish catches and effort by species and month for Northern Vancouver Island, 2001.

			Rockfish Catch, kept									
		Effort	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
	Value											
Jul	Total	6092	946	33	67	0	848	0	0	220	90	2527
	STD	736	852	33	47	0	335	0	0	124	102	1034
Aug	Total	4733	1089	99	0	58	1063	0	0	508	213	3127
	STD	895	387	42	0	45	283	0	0	181	64	773
	Total	10825	2035	132	67	58	1911	0	0	728	303	5654
	STD	1159	935	54	47	45	438	0	0	220	120	1291

Table 30. Rockfish catches and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001.

			Rockfish Catch, kept									
		Effort	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Area	Value											
A	Total	3689	1222	62	67	0	820	0	0	374	57	2900
	STD	747	886	41	47	0	342	0	0	170	37	1105
B	Total	3955	549	44	0	35	757	0	0	230	187	1898
	STD	809	272	31	0	39	256	0	0	126	112	621
C	Total	3110	246	25	0	23	319	0	0	116	56	809
	STD	362	123	16	0	23	97	0	0	58	23	244
E	Total	71	18	1	0	0	15	0	0	8	3	47
	STD	0	10	1	0	0	6	0	0	5	1	14
	Total	10825	2035	132	67	58	1911	0	0	728	303	5654
	STD	1159	935	54	47	45	438	0	0	220	120	1291

Table 31. Rockfish released and effort by species and month for Northern Vancouver Island, 2001.

			Rockfish Catch,released									
		Effort	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
	Value											
Jul	Total	6092	292	0	61	170	144	0	0	0	194	1345
	STD	736	290	0	39	206	77	0	0	0	206	511
Aug	Total	4733	240	0	0	0	86	0	0	28	170	658
	STD	895	118	0	0	0	59	0	0	23	71	194
	Total	10825	532	0	61	170	230	0	0	28	364	2003
	STD	1159	313	0	39	206	97	0	0	23	217	546

Table 32. Rockfish released and effort by species and Statistical Sub-Area for Northern Vancouver Island, 2001.

			Rockfish Catch, released									
		Effort	Black	Canary	Copper	China	Quillback	Redstripe	Tiger	Yellow eye	Yellow tail	All Rockfish
Area	Value											
A	Total	3689	300	0	0	170	68	0	0	0	58	975
	STD	747	291	0	0	206	62	0	0	0	45	459
B	Total	3955	141	0	31	0	90	0	0	17	250	660
	STD	809	104	0	24	0	55	0	0	20	211	270
C	Total	3110	85	0	30	0	72	0	0	11	54	358
	STD	362	52	0	30	0	50	0	0	12	28	120
E	Total	71	6	0	0	0	0	0	0	0	2	10
	STD	0	4	0	0	0	0	0	0	0	1	5
	Total	10825	532	0	61	170	230	0	0	28	364	2003
	STD	1159	313	0	39	206	97	0	0	23	217	546

Table 33. Monthly CPUE (catches per boat trip) by species for Northern Vancouver Island, 2001.

Month	Salmon Catch						Salmon Released			Groundfish Catch				Total
	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Other Salmon	Halibut	Lingcod	Total Groundfish	Rockfish	Catch Success
Jul	0.41	0.01	0.01	0.08	0.00	0.51	0.73	2.70	3.46	0.10	0.09	0.28	0.41	1.21
Aug	0.27	0.01	0.00	2.43	0.01	2.71	0.39	4.10	5.38	0.04	0.09	0.24	0.66	3.64
Yearly	0.35	0.01	0.01	1.11	0.00	1.47	0.58	3.31	4.30	0.08	0.09	0.26	0.52	2.27

* Calculated using tables 23, 25, 27 and 29.

Table 34. Monthly number of adipose-clipped chinook observed for Northern Vancouver Island, 2001.

Jul	Unclipped	199
Jul	Clipped	8
Jul	Total	207
Aug	Unclipped	106
Aug	Clipped	4
Aug	Total	110
Total	Unclipped	305
	Clipped	12
	Total	317
Proportion of Marks		0.038

Table 35. Monthly estimated catches of adipose-clipped chinook for Northern Vancouver Island, 2001.

Jul	Catch	97
	STD	40
Aug	Catch	46
	STD	26
Total	Catch	142
	STD	40

FIGURES

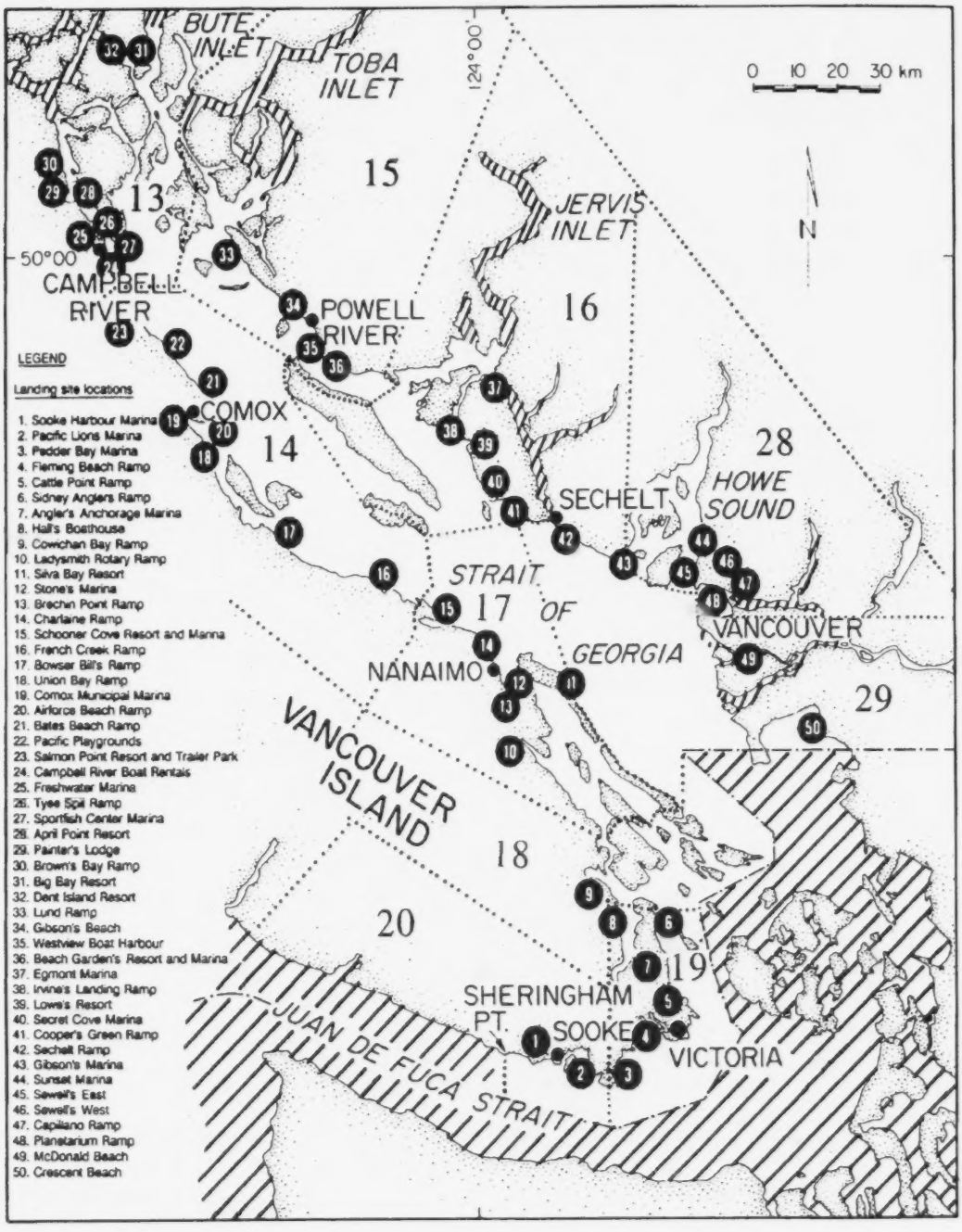


Figure 1. Strait of Georgia creel survey study area and landing site locations, 2001.

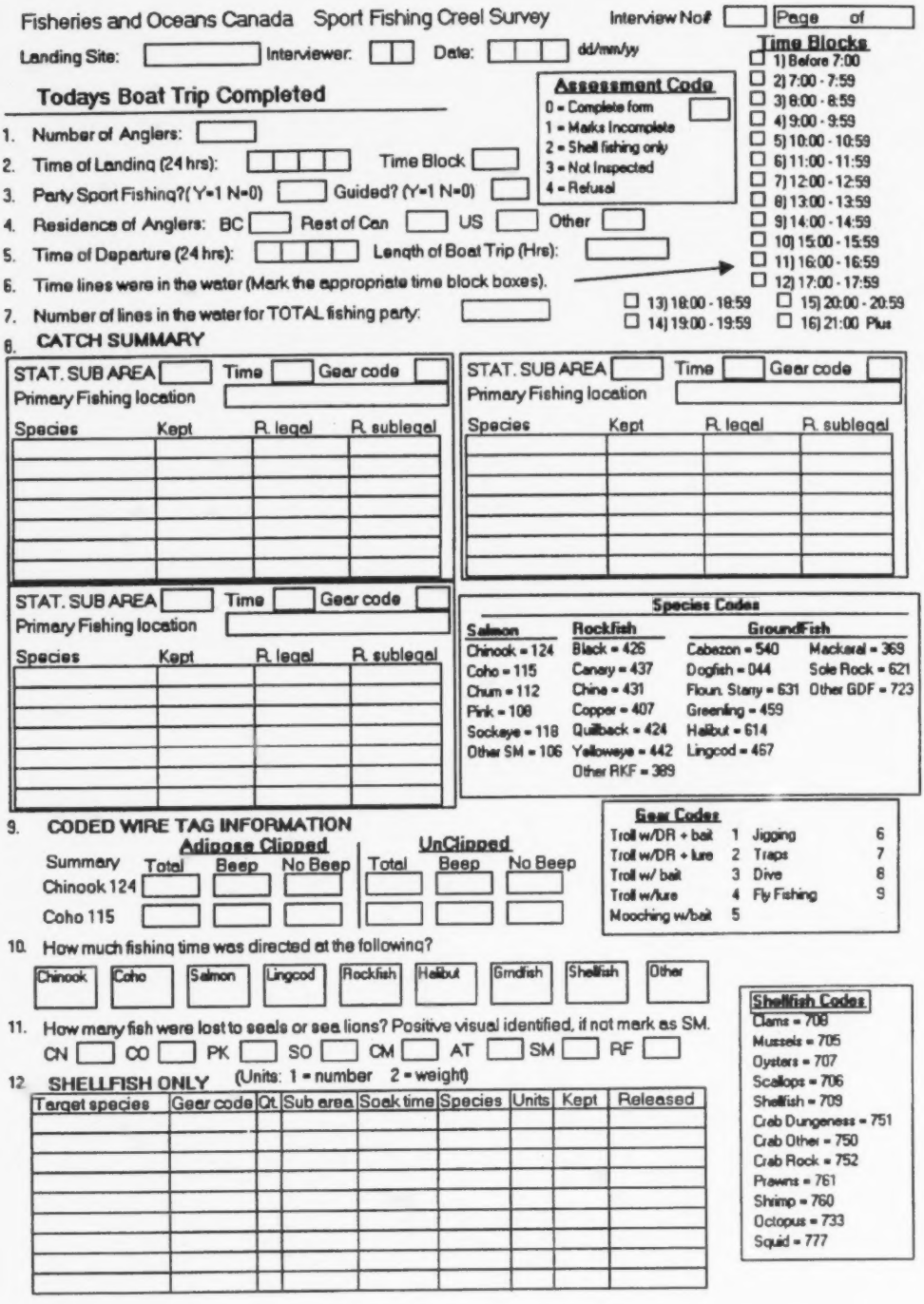


Figure 2. Strait of Georgia and Northern Vancouver Island interview form for 2001.

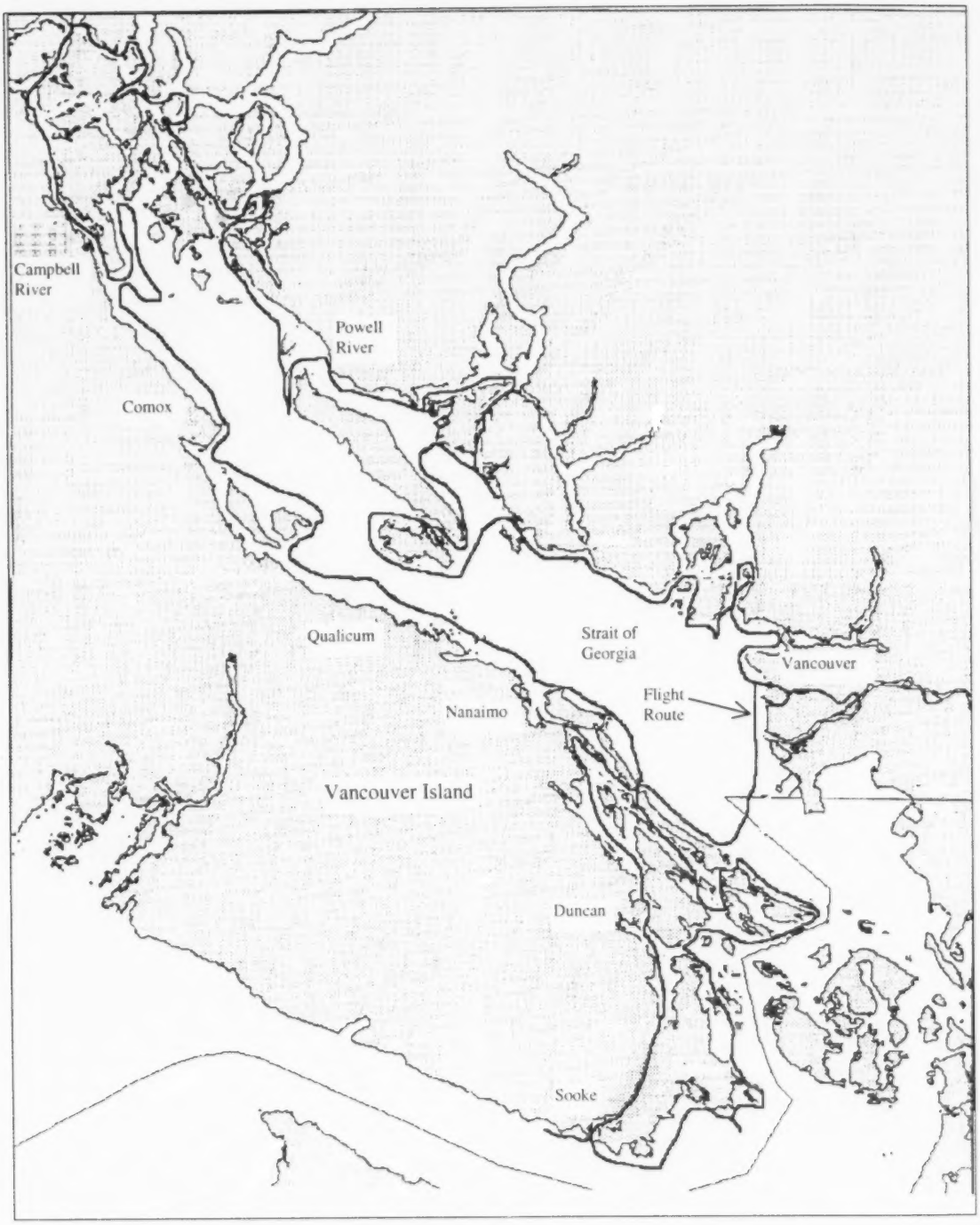


Figure 3. Overflight routes for the Strait of Georgia, 2001.

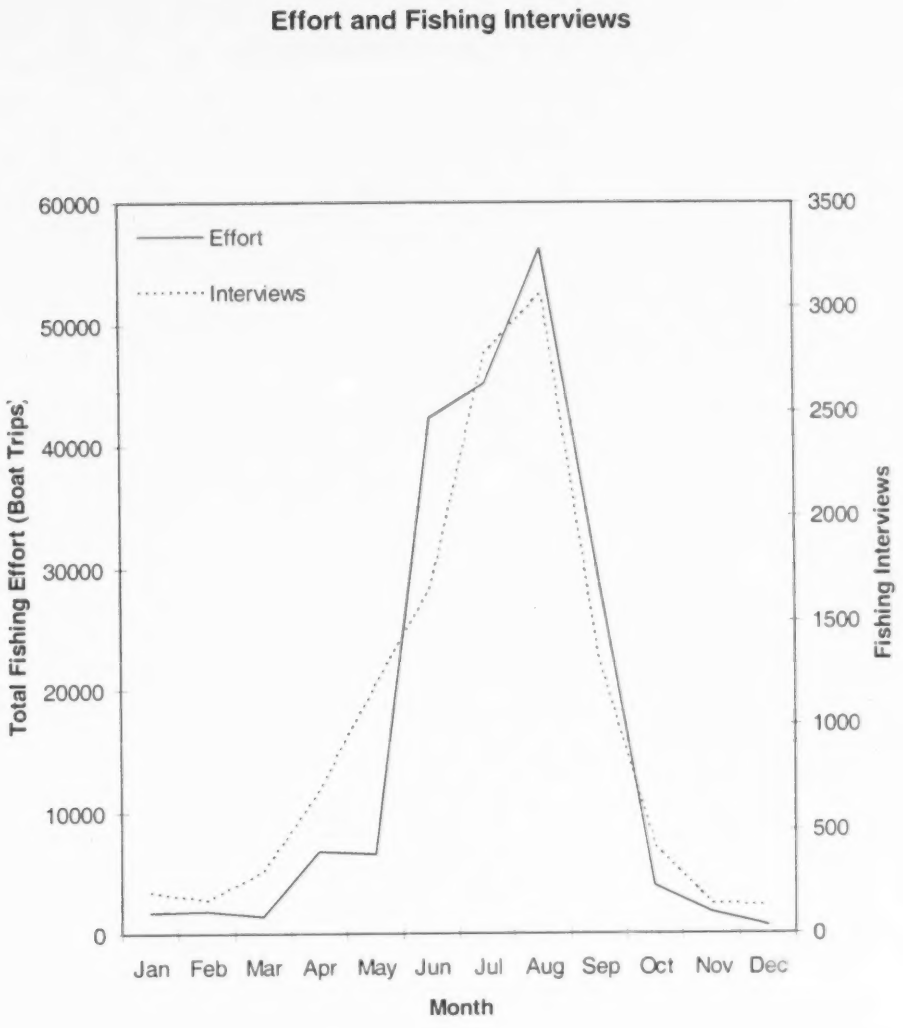


Figure 4. Comparison of monthly total fishing effort and monthly fishing interviews, Strait of Georgia, 2001.

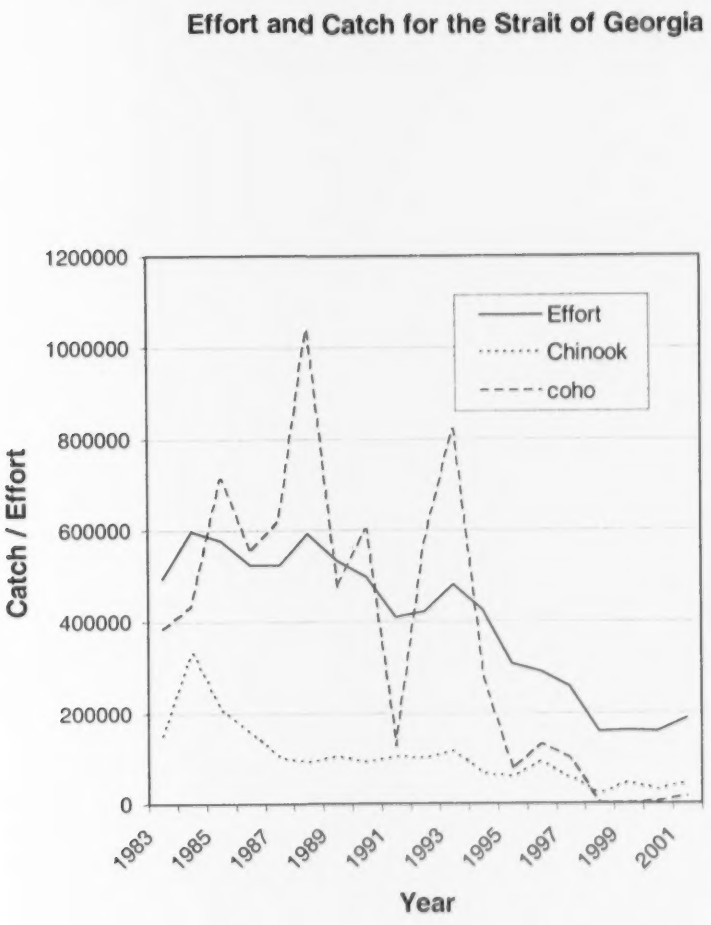


Figure 5. Tidal effort (boat trips) statistics and sport catches of chinook and coho salmon for the Strait of Georgia, 1983 – 2001. (For the purposes of historical comparisons only the data from April to September were used. See Appendix E-3 for historical data graph 1960 to 1982).

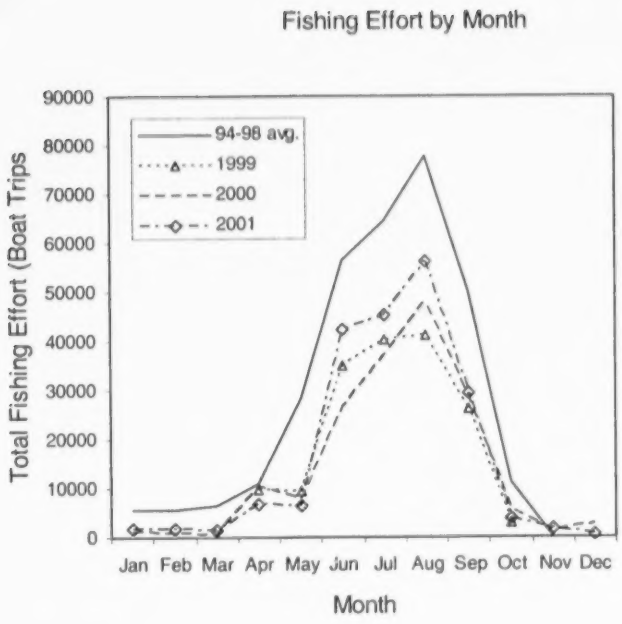


Figure 6. Monthly fishing effort estimates (boat trips) for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the 5 year avg. for 1994 to 1998.

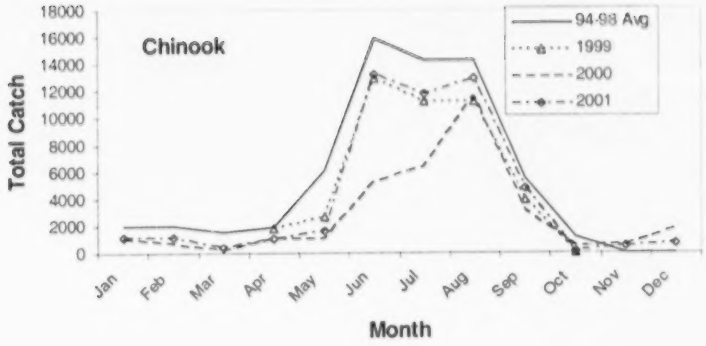


Figure 7. Monthly chinook catches for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the five year avg. for 1994 to 1998.

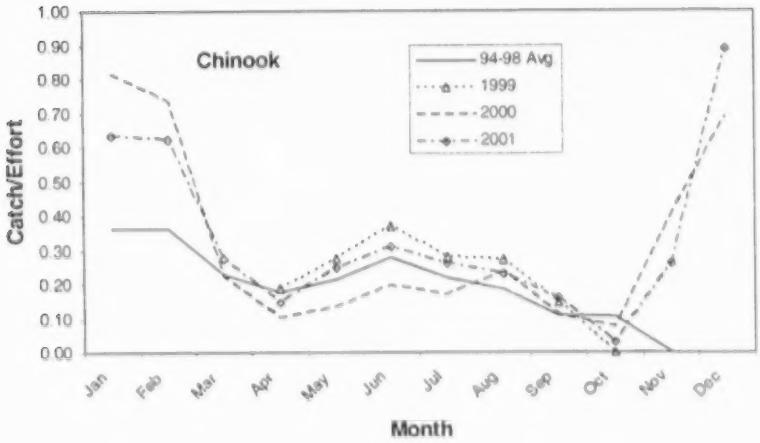
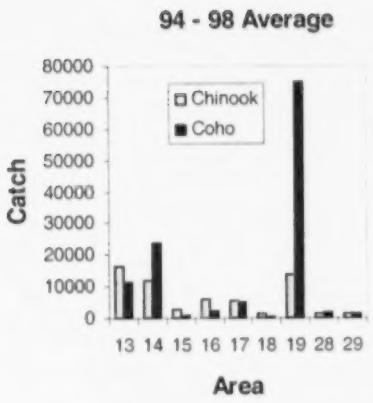
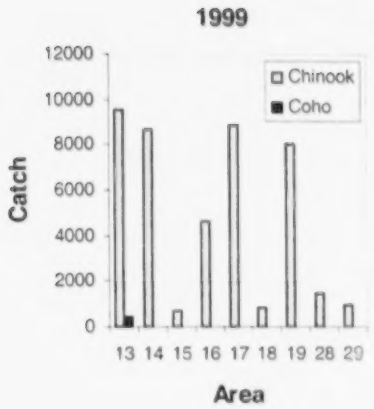
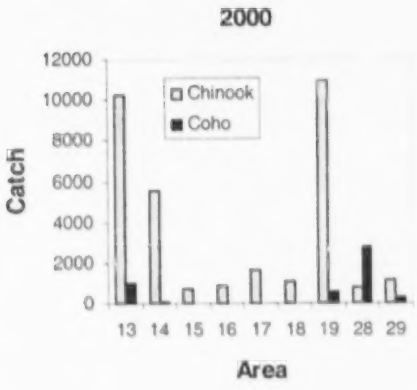


Figure 8. Monthly chinook catches per boat trip for the Strait of Georgia sport fishery for 1999, 2000, 2001 and the five year avg. for 1994 to 1998.







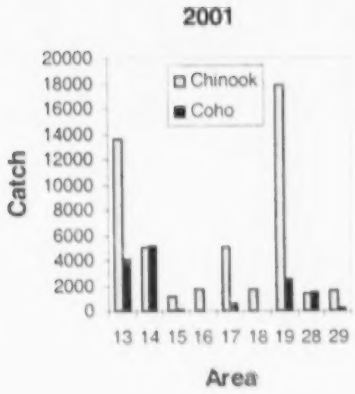


Figure 9. Annual sport catches of chinook and coho salmon by Statistical Area in the Strait of Georgia, 1994-1998 avg., 1999, 2000 and 2001.

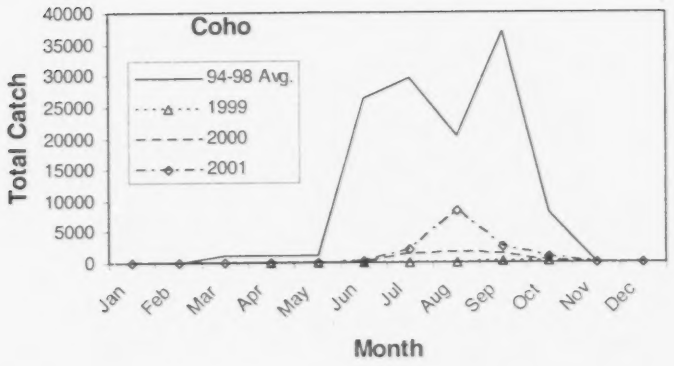


Figure 10. Monthly coho catches for the Strait of Georgia sport fishery for 1994-1998 avg., 1999, 2000 and 2001.

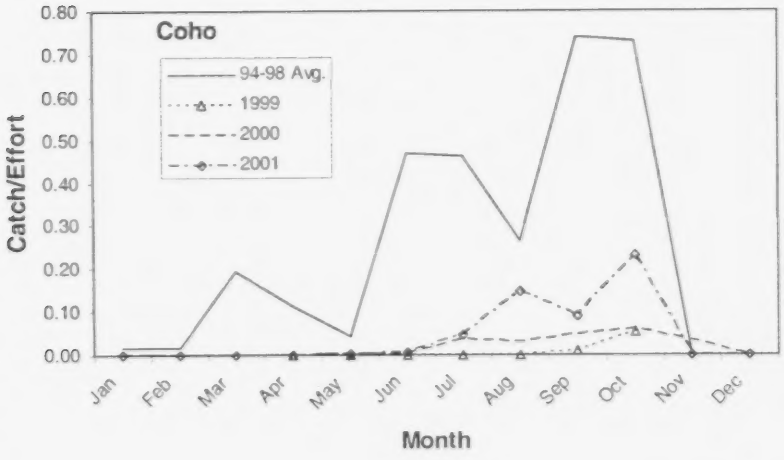


Figure 11. Monthly coho catches per boat trip for the Strait of Georgia sport fishery for 1994-1998 avg., 1999, 2000 and 2001.

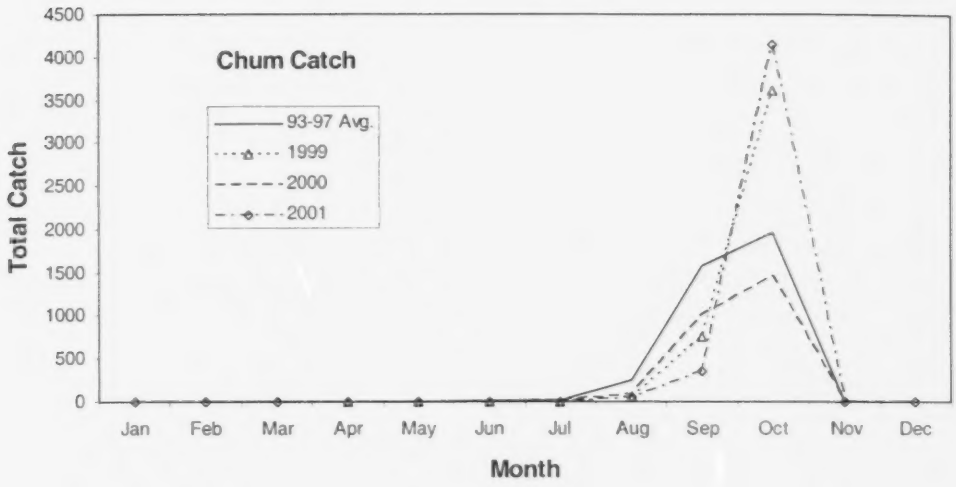


Figure 12. Monthly chum catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001.

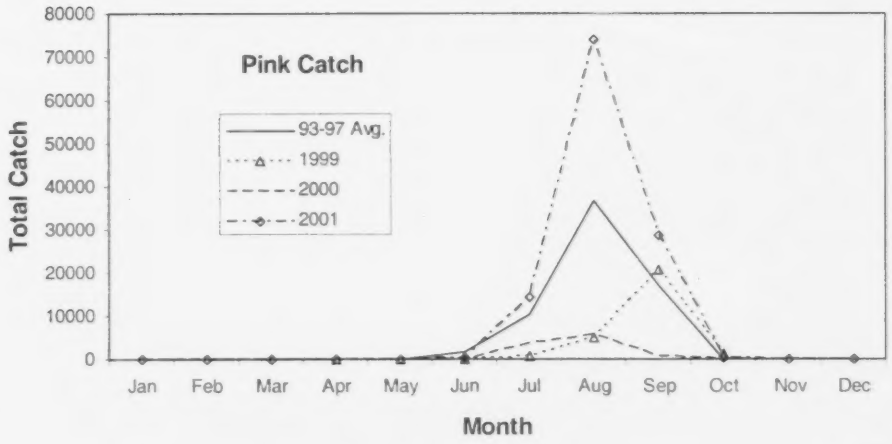


Figure 13. Monthly pink catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001.

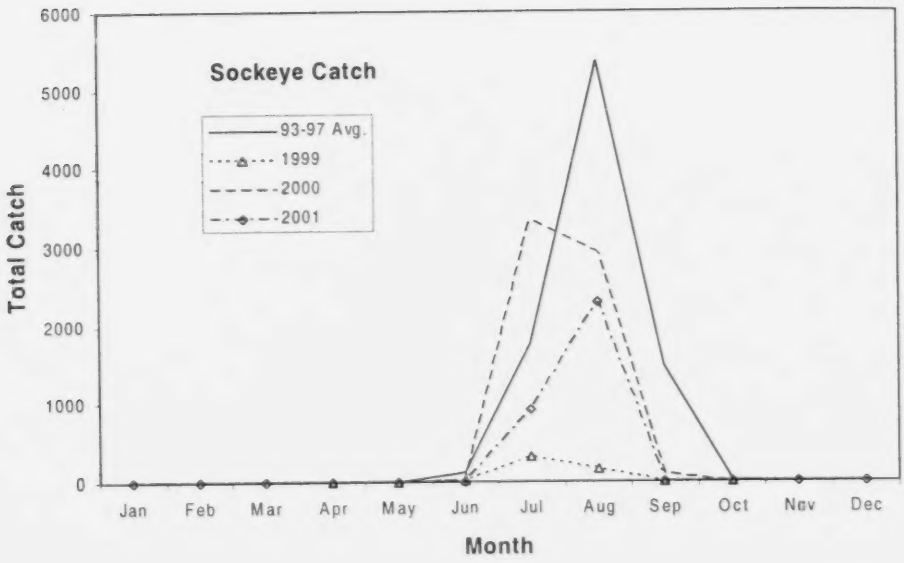


Figure 14. Monthly sockeye catches for the Strait of Georgia sport fishery for 1994-1998 avg., 1999, 2000 and 2001.

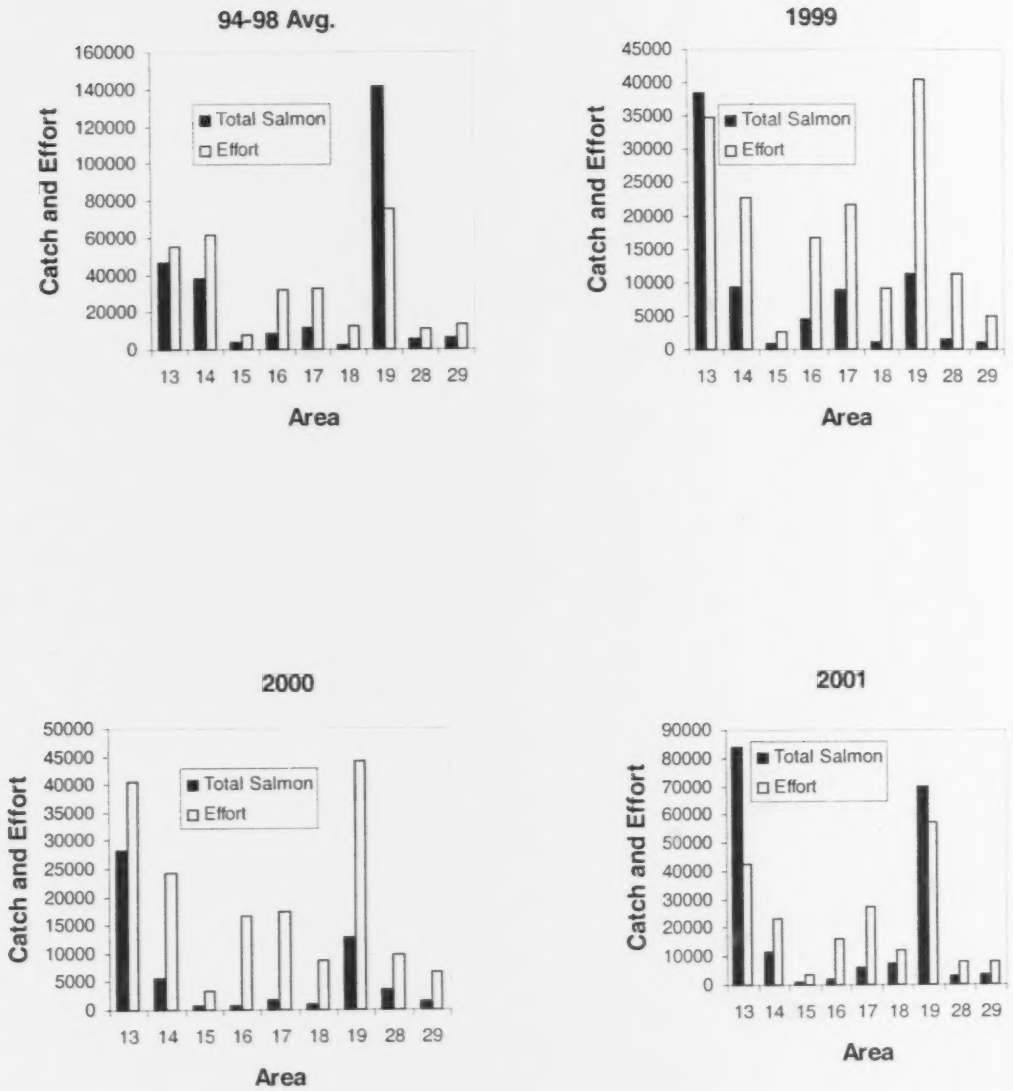


Figure 15. Total salmon landed and total fishing effort expended by Statistical Area in the Strait of Georgia sport fishery, 1994-1998, 1999, 2000 and 2001.

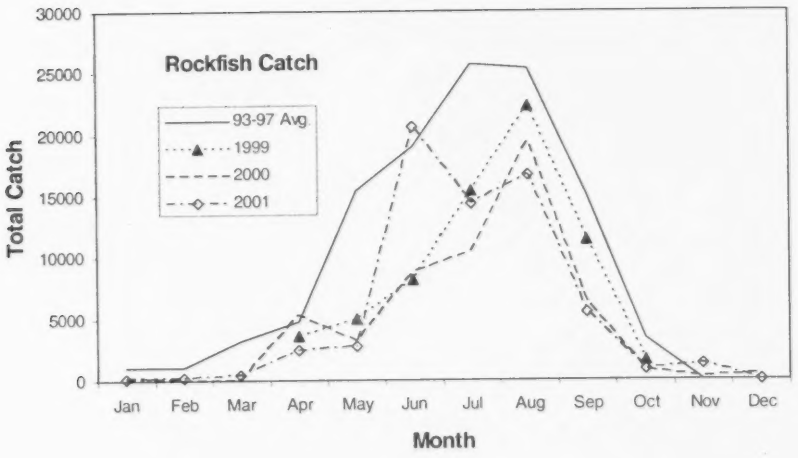


Figure 16. Monthly rockfish catches for the Strait of Georgia sport fishery, 1994-1998 avg., 1999, 2000 and 2001.

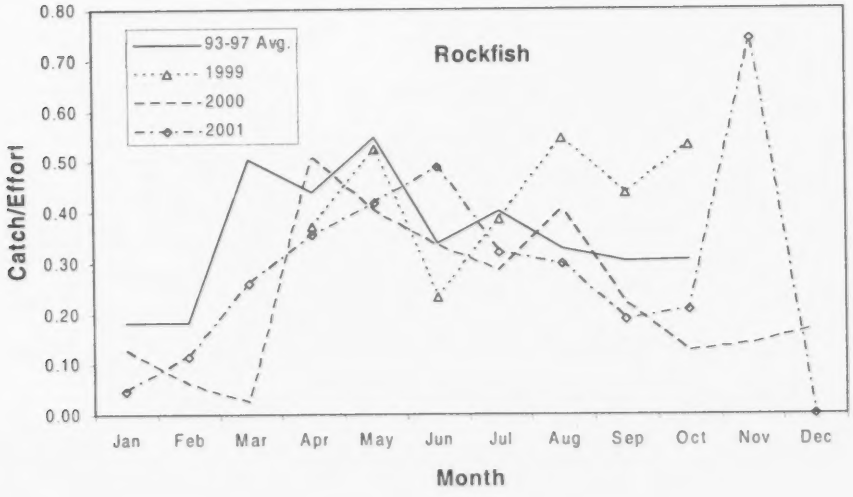


Figure 17. Monthly rockfish catches per boat trip for the Strait of Georgia, 1994-1998 avg., 1999, 2000 and 2001.

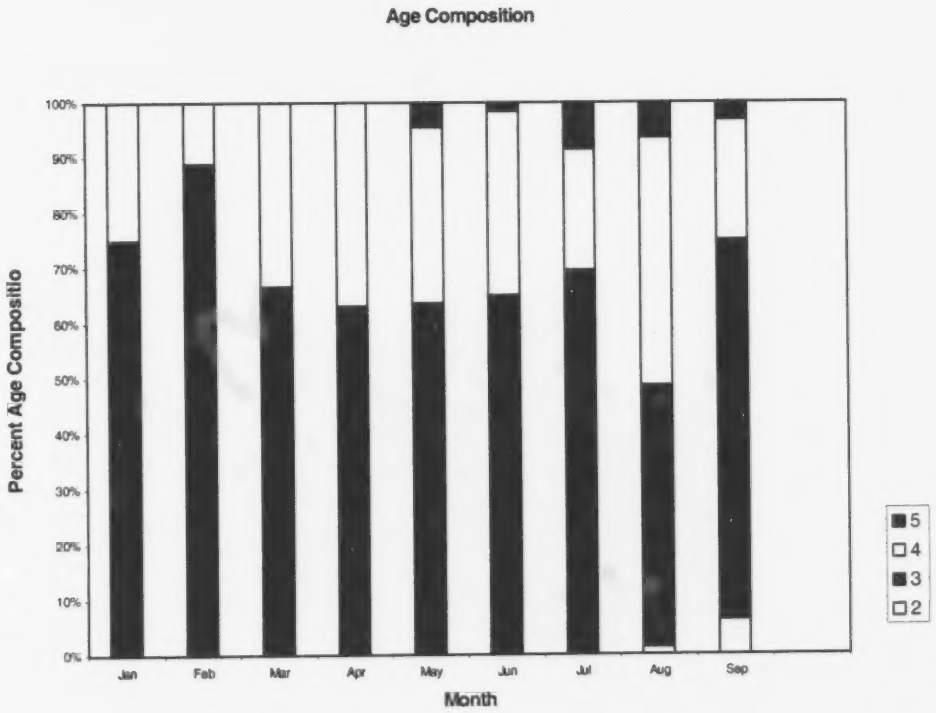


Figure 18. Monthly percent age composition of chinook salmon sampled in the Strait of Georgia Creel Survey, 2001.

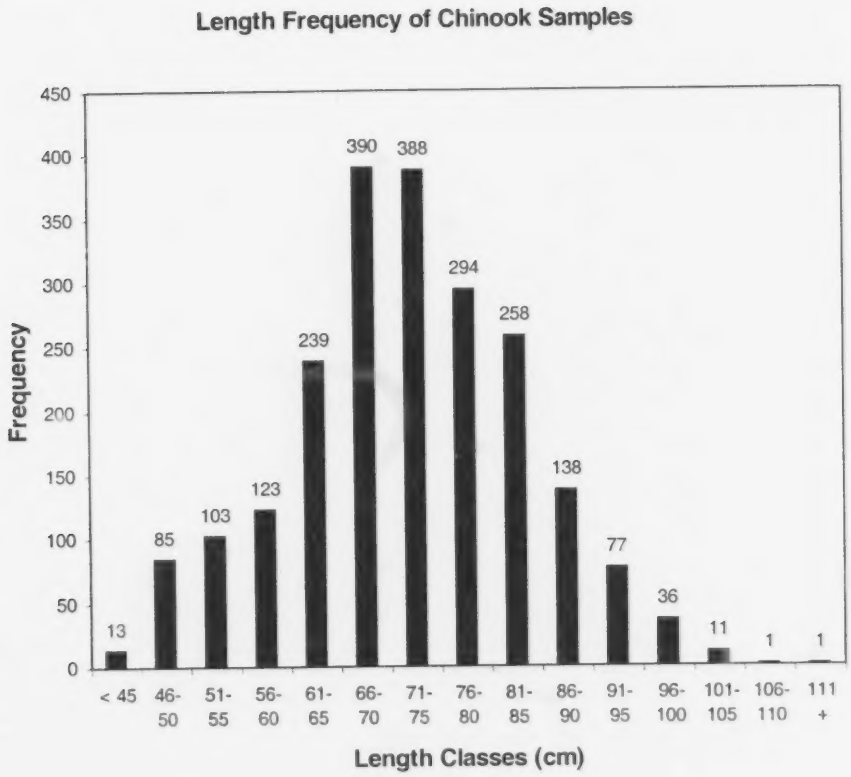


Figure 19. Length frequency distribution of chinook salmon sampled in the Strait of Georgia Creel Survey, 2001.

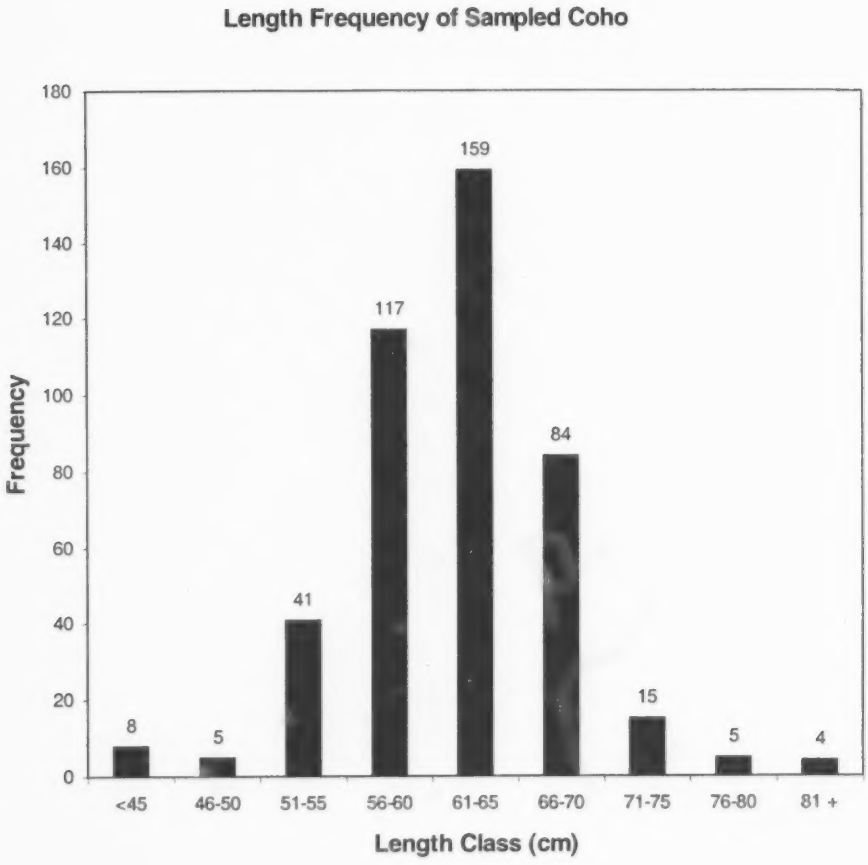


Figure 20. Length frequency distribution of coho salmon sampled in the Strait of Georgia Creel Survey, 2001.

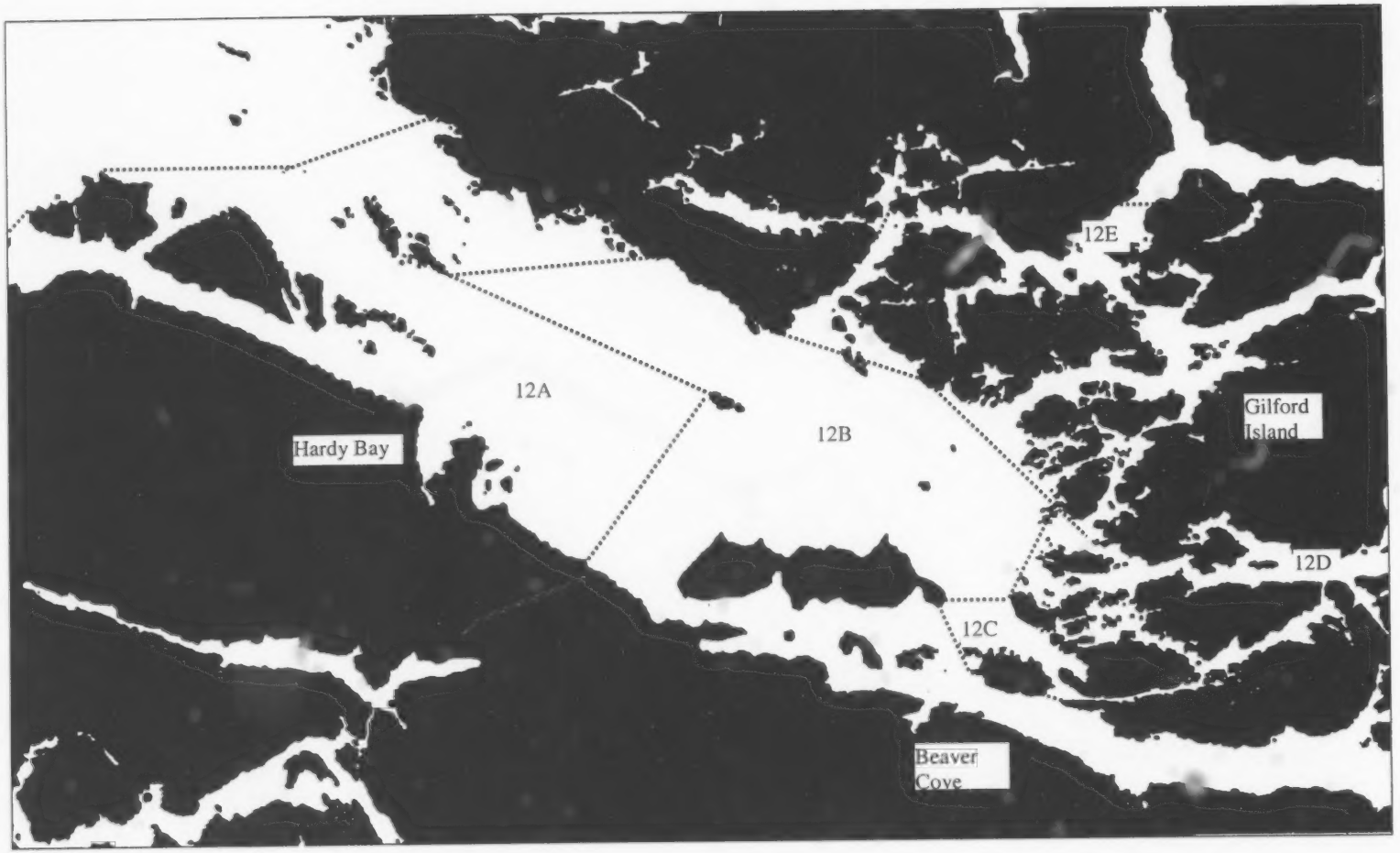


Figure 21. Statistical sub area map for the Northern Vancouver Island creel survey.

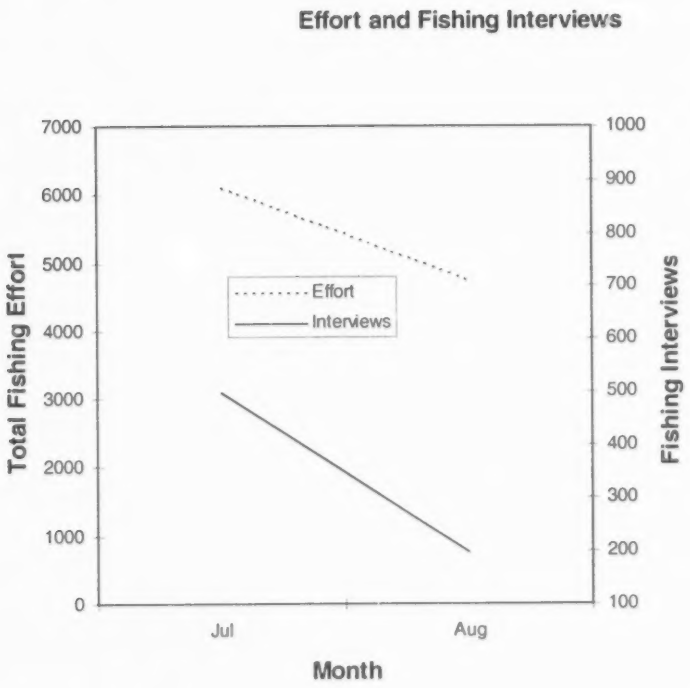


Figure 22. Comparison of monthly total fishing effort and monthly fishing interviews, Northern Vancouver Island, 2001.

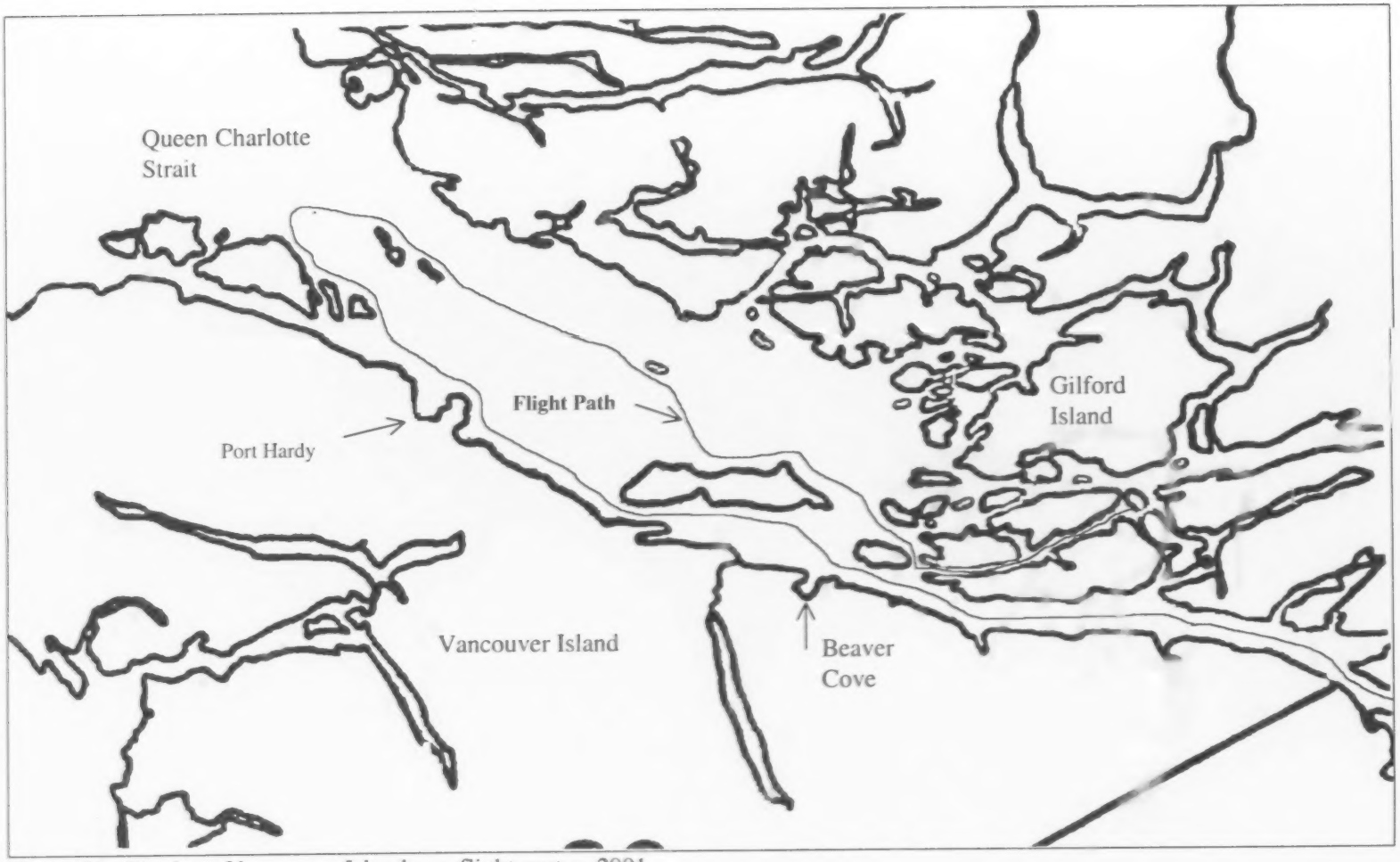


Figure 23. Northern Vancouver Island overflight routes, 2001.

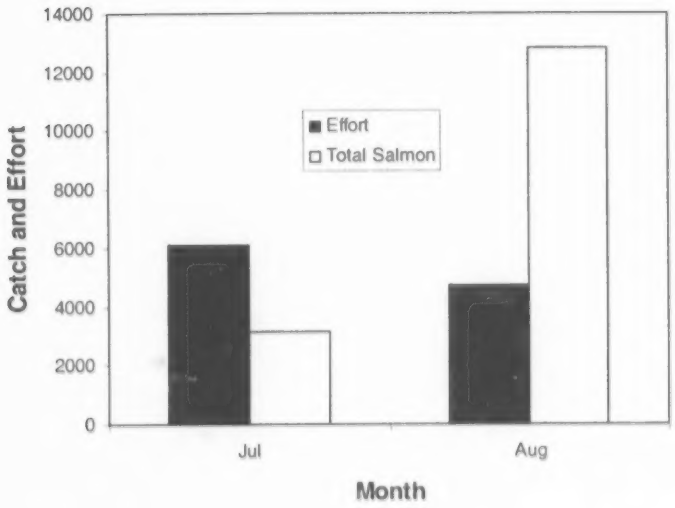


Figure 24. Total salmon catch and effort (boat trips) by month for Northern Vancouver Island, 2001.

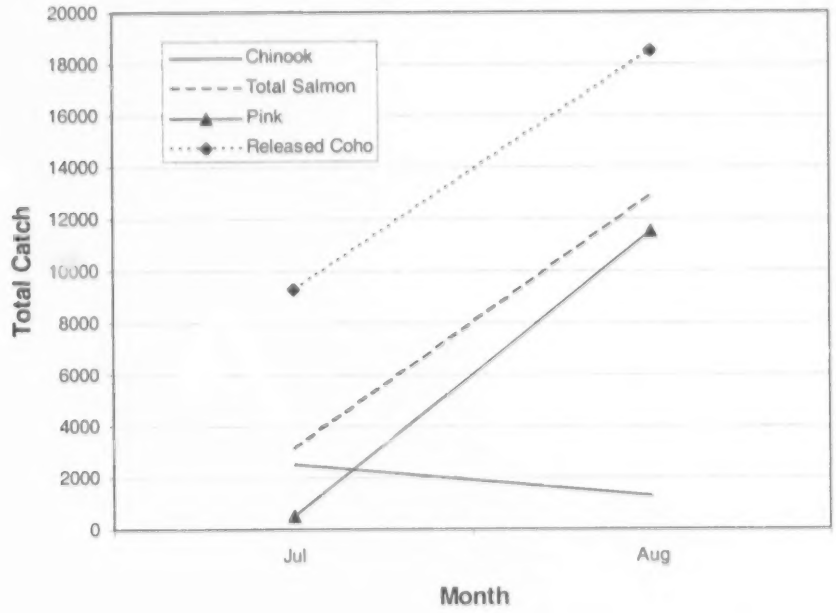


Figure 25. Comparison of monthly salmon catch between major target species in Northern Vancouver Island, 2001.

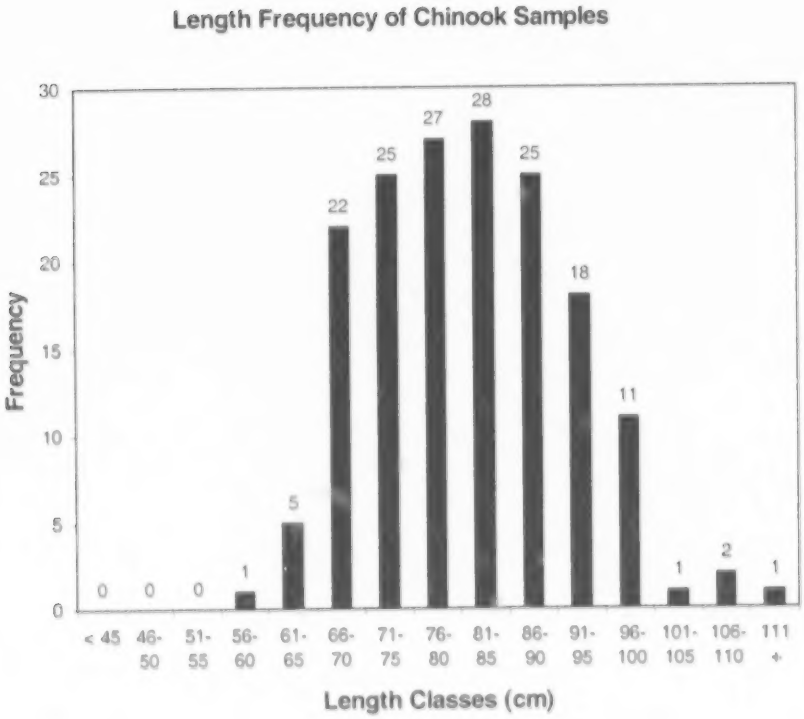


Figure 26. Length frequency distribution of chinook salmon sampled in the Northern Vancouver Island Creel Survey, 2001.

APPENDICES

APPENDIX A. PREVIOUS STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND CREEL SURVEY REPORTS.

Shardlow, T. F., K. K. English, T. Hoyt, G. E. Gillespie, and T. A. Calvin. 1989. Strait of Georgia Creel Survey sport fishery statistics, 1983. Can. Manuscr. Rep. Fish. Aquat. Sci. 1872: 53 p.

Shardlow, T. F. and L. D. Collicutt. 1989 a. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 2032: 61 p.

Shardlow, T. F. and L. D. Collicutt. 1989 b. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1985. Can. Manuscr. Rep. Fish. Aquat. Sci. 2033: 60 p.

Shardlow, T. F. and L. D. Collicutt. 1989 c. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1986. Can. Manuscr. Rep. Fish. Aquat. Sci. 2034: 61 p.

Shardlow, T. F. and L. D. Collicutt. 1989 d. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1987. Can. Manuscr. Rep. Fish. Aquat. Sci. 2035: 62 p.

Shardlow, T. F. and L. D. Collicutt. 1989 e. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1988. Can. Manuscr. Rep. Fish. Aquat. Sci. 2036: 63 p.

Collicutt, L. D. and T. F. Shardlow. 1990. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1989. Can. Manuscr. Rep. Fish. Aquat. Sci. 2087: 75 p.

Collicutt, L. D., B. G. Naito, P. Ryall, and L. Lapi. 1992. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Tech. Rep. Fish. Aquat. Sci. 1857: 121 p.

Collicutt, L. D. and T. F. Shardlow. 1992. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1990. Can. Manuscr. Rep. Fish. Aquat. Sci. 2109: 76 p.

Collicutt, L. D. and T. F. Shardlow. 1995. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1991. Can. Manuscr. Rep. Fish. Aquat. Sci. 2137: 75 p.

Collicutt, L. D. and T. F. Shardlow. 1994. Strait of Georgia sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Manuscr. Rep. Fish. Aquat. Sci. 2221: 75 p.

Collicutt, L. D., T. F. Shardlow, B. D. Smith, and G. E. Gillespie. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1992. Can. Tech. Rep. Fish. Aquat. Sci. 1973: 53 p.

Collicutt, L. D., T. F. Shardlow, B. D. Smith, and G. E. Gillespie. 1994. Northern Vancouver Island sport fishery creel survey statistics for salmon and groundfish, 1993. Can. Manuscr. Rep. Fish. Aquat. Sci. 1974: 53 p.

Hardie, D. C., D. A. Nagtegaal, and L. Nagy. 1999. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1998. Can. Manuscr. Rep. Fish. Aquat. Sci. 2500: 92 p.

Hardie, D. C., D. A. Nagtegaal, and L. Nagy. 2001. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 1999. Can. Manuscr. Rep. Fish. Aquat. Sci. 2553: 111 p.

Hardie, D. C., D. A. Nagtegaal, K. Hein and J. Sturhahn. 2002. Strait of Georgia sport fishery and Northern Vancouver Island creel survey statistics for salmon and groundfish, 2000. Can. Manuscr. Rep. Fish. Aquat. Sci. 2608: 112 p.

APPENDIX B. STRAIT OF GEORGIA CREEL SURVEY STUDY AREA.

The Strait of Georgia Creel Survey study area and landing site locations used in 1998 are shown in Appendix B-2. The study area includes those waters of Juan de Fuca Strait and the Strait of Georgia bounded in the south by a line from Sheringham Pt. on Vancouver Island due south to an intersection with the International Boundary and along the International Boundary to the B.C, Mainland coast at Blaine (Boundary Bay) and in the northern by the following 3 boundary lines:

1) Discovery Passage from Granite Pt. on Quadra Island to the stream mouth west of Moriarty Pt. on Vancouver Island.

2) Okisollo Channel from Granite Pt. on Quadra Island due northern to Sonora Island.

3) Cordero Channel from Burnt Bluff on the mainland 214° passing west of Dent Island to Sonora Island.

The area for which the Strait of Georgia Creel Survey statistics apply includes the above listed administrative area with the exception of the following areas:

1) Bute Inlet above a line from Lawrence Pt. running across the inlet. This area coincides with management units 13-21 and 13-22.

2) Waters of Pryce Channel, Waddington Channel, Pendrell Sound, Homfray Channel and Toba Inlet bounded by a line drawn from Horace Head on East Redonda Island at the south end of Waddington Channel to the northern point of Roscoe Bay on West Redonda Island and a line drawn within Homfray Channel from Price Pt. on the eastern shore of the channel by a line drawn from George Head at the easterly entrance of Ramsay Arm to Sutil Pt. on Cortes Island.

3) Hotham Sound above a line drawn from Elephant Pt. on the western shore of the Sound to the southern point of Granville Bay on the eastern shore of the Sound.

4) Jervis Inlet above a line drawn within Prince of Whales Reach from the mouth of Treat Creek on the east shore across the Reach to the Summit (1625') at the head of Goliath Bay.

5) Sechelt Inlet including Narrows Inlet and Salmon Inlet above a line drawn within Skookumchuck Narrows from the "dog-leg" point south-east of the Egmont Pt. 224° across the Narrows to Sechelt Peninsula.

APPENDIX C. METHODS AND EQUATIONS USED IN ANALYSIS OF CATCH AND EFFORT STATISTICS FOR THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY CREEL SURVEY.

Description of terms, variables and subscripts used in this report.

DESCRIPTION OF TERMS

Shift/Stint - Represents a combination of a day type and landing site which was sampled on a single day. i.e. one sampling stint performed by an interviewer.

Work block - Represents one of four possible periods at a particular site of a given day type.
Work Block 1 is before 11 am
Work Block 2 is 11 am - 3 pm
Work Block 3 is 3 pm - 7 pm
Work Block 4 is after 7 pm

Day type There are two possible day types: weekdays and weekends; holidays are considered to be weekend days.

Time block - Each day is divided into 16 time blocks which are:
1) before 7 am
2) 7:00 - 7:59 am
3) 8:00 - 8:59 am

15) 8:00 - 8:59 pm
16) after 9 pm

DESCRIPTION OF VARIABLES

A	-	Number of boats actively fishing
B	-	Number of boats observed on a flight
C	-	Catch
C'	-	Catch of marked salmon
CPE	-	Catch per boat trip
E	-	Effort (estimated total number of boat trips)
I	-	Number of boats interviewed and found to have been fishing
L	-	Number of boats landing
n	-	Number sampled
N	-	Population size from which n samples were observed
P	-	Proportion
T	-	Number of boat trips
V	-	Number found to be marked
W1	-	Weighting factor to expand for all possible stints at each site
W2	-	Weighting factor to expand for all boats that landed in each work

DESCRIPTION OF SUBSCRIPTS

a	-	age
g	-	a set of landing sites
d	-	day type
i	-	site
j	-	work block
k	-	stint
l	-	landing time block
m	-	month

q		the next boat landing at site i and upon interviewing, found to have been fishing (q ranges from 1 to n)
r	-	species
s	-	sub-Statistical Area
t	-	time block
u	-	flight
x	-	region
y	-	annual

The description of terms, variables and subscripts used in the data analysis is given in Table C-1.

Calculation of Catch and Effort Statistics

To estimate the monthly catch and effort, three components had to be calculated from a month's data:

(1) the weighted mean daily fishing pattern from interview data,
(2) the weighted mean catch per unit effort from interview data and
(3) the mean sport count from overflight data.

The equations used to estimate the means and variances for all catch and effort statistics are shown below.

Weighting factors used to estimate the daily fishing activity were calculated using the equations derived from DPA Consulting Ltd. (1982).

The data obtained from each shift were multiplied by the following weighting factor (W1) to expand for all possible stints at each site. The formula reads:

$$W1_{dij} = \frac{N_d}{n_{dij}} \qquad (1)$$

where N_d is the total number of days of type d in that month and n_{dij} is the number of times the jth work block at the ith site was sampled on type d days.

The interviews aggregated by work block were multiplied by the weighting factor W2 to expand for all boats that landed in each work block. The formula reads:

$$W2_{dijk} = \frac{L_{dijk}}{l_{dijk}} \qquad (2)$$

where L_{dijk} is the number of boats landed and I_{dijk} is the number of boats interviewed on the kth stint in the jth work block at the ith site on a day type d.

Therefore, the following equations can be used to calculate an unbiased estimate of the total monthly catch ($\hat{C}_{dgr}$), fishing trips ($\hat{T}_{dg}$) and fishing activity in time block $\hat{A}_{dgt}$ for each day type (d) where g is a set of landing sites (i). These formulas read:

$$\hat{C}_{dgr} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk} C_{dijklqr}) \right] \tag{3}$$

$$\hat{T}_{dg} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk}) \right] \tag{4}$$

$$\hat{A}_{dgt} = \sum_i \sum_j \left[W1_{dij} \sum_k \sum_q (W2_{dijk} A_{dijkqt}) \right] \tag{5}$$

where C_{dijkqr} is the catch of species r by the qth fishing party, and A_{dijkqt} can equal 0 or 1, thereby indicating whether the qth fishing party was actively fishing in time block t. Thus, the mean monthly catch per unit effort (CPE_{dgr}) measured in terms of numbers of fish kept per completed boat trip, and proportion of daily fishing effort active during the hour of the aerial survey (P_{dgt}) can be calculated with the following equations:

$$CPE_{dgr} = \frac{\hat{C}_{dgr}}{\hat{T}_{dg}} \tag{6}$$

$$P_{dgt} = \frac{\hat{A}_{dgt}}{\hat{T}_{dg}} \tag{7}$$

where CPE_{dgr} and P_{dgt} are calculated for each day type (d) and group of landing sites (g).

The groups of landing sites reflect geographic areas with similar catch rates and/or activity patterns.

The estimated mean number of boats fishing during the hour of the sport boat count by overflight was calculated for each sub-Statistical Area using the following equation:

$$\overline{B}_{dst} = \frac{\sum_{u} B_{sdtu}}{n_{ds}} \tag{8}$$

where B_{sdtu} is the number of boats observed fishing on flight u at time t, in sub-Statistical Area s for day type d.

The mean sport boat count at the time of the overflight ($\overline{B}_{dst}$) and proportion of daily fishing effort active during the hour of the overflight (P_{dgt}) were used in the following equation to calculate the total fishing effort for sub-Statistical Area s on day type d:

$$E_{ds} = \overline{B}_{dst} \frac{1}{P_{dgt}} N_d \tag{9}$$

where N_d is the number of type d days in the month. Interview data for the sub-Statistical Areas fished (s) by anglers landing at each of the sites (i) within a landing group (g) were used to select the proportions (P_{dgt}) that are appropriate for each mean boat count ($\overline{B}_{dst}$).

The estimate for total effort by sub-Statistical Area and day type (E_{ds}) and the weighted catch per boat trip for a group of landing sites by day type, area and species (CPE_{dgr}) were used to calculate total catch for each species (r) and each sub-Statistical Area (s):

$$C_{sr} = \sum_{d} (E_{ds} CPE_{dgr}) \tag{10}$$

The interview data were also used to select the catch per effort estimates (CPE_{dgr}) that should be applied to the effort estimates (E_{ds}) for a specific sub-Statistical Area (s).

Variance of Total Fishing Effort

The variance estimate for the number of boat trips in each sub-area was:

$$Var(b_{dsu}) = \frac{(N_d - n_{ds})}{(N_d - 1)} \times \frac{\sum_{u=1}^{n} b_{dsu}^2 - \frac{\left(\sum_{u=1}^{n} b_{dsu}\right)^2}{n_{ds}}}{(n_{ds} - 1)} \quad (11)$$

where b_{dsu} is the estimated number of boat trips on aerial survey u, in sub-area s, on day type d and n is the number of days when boat counts were conducted in sub-area s on type d days; and N_d is the total number of type d days in the month.

The variance estimate for the total number of boat trips in a given month for each day type and sub area was:

$$Var(E_{b_{ds}}) = N_d^2 \times Var(b_{ds}) \quad (12)$$

Variance of Total Catch

The variance estimate for mean catch per effort was:

$$Var(CPE_{dsi}) = \frac{\sum_{i=1}^{ni} cpe_{dsi}^2 - \frac{\left(\sum_{i=1}^{ni} \times cpe_{dsi}\right)^2}{ni_{ds}}}{(ni_{ds} - 1)} \quad (13)$$

where cpe_{dsi} is the catch per effort reported in interview i, for the sub-area or group of sub-areas s, on the day type d; and ni_{ds} is the number of interviews for that stratum.

The variance for the total catch in each stratum was estimated by combining the variance for fishing effort and variance for catch per effort using the significant terms of a Taylor series expansion (Cochran 1963):

$$Var(C_s) = \sum_{d=1}^{2} \left(E_{ds}^2 \times Var(CPE)_{ds} + CPE_{ds}^2 \times Var(E)_{ds} + Var(E_{ds}) \times Var(CPE)_{ds} \right) \quad (14)$$

Estimation of Marked Chinook and Coho Salmon

The incidence of marked (adipose-clipped) chinook and coho was recorded in each interview. The proportion of marks observed for each region, month and species (P_{xmr}) was calculated as:

$$P_{xmr} = \frac{V_{xmr}}{n_{xmr}} \quad (15)$$

where V is the number of marked fish observed and n is the number of fish inspected by region (x), month (m) and species (r).

The variance of each proportion was calculated as:

$$S^2_{P\,xmr} = \frac{P_{xmr}(1 - P_{xmr})}{n_{xmr}} \quad (16)$$

Monthly catch estimates of marked salmon were calculated as:

$$C'_{xmr} = P_{xmr} C_{xmr} \quad (17)$$

where C_{xmr} is the estimated catch of species r in region x and month m.

The variance of the marked catch estimates was calculated as:

$$S^2_{C'\,xmr} = P^2_{xmr} S^2_{C\,xmr} + C^2_{xmr} S^2_{P\,xmr} + S^2_{C\,xmr} S^2_{P\,xmr} \quad (18)$$

where S^2_{Cxmr} is the variance of the catch estimates of species r in region x and month m.

The estimate annual proportions of marked salmon caught in each region (weighted by the corresponding regional annual catch estimates) were calculated as:

$$P_{xry} = \frac{C'_{xry}}{C_{xry}} \tag{19}$$

where

$$C'_{xry} = \sum_{m} C'_{xmr} \quad and \quad C_{xry} = \sum_{m} C_{xmr} \tag{20}$$

The variance of the annual proportions was calculated as:

$$S^2{}_{P_{xry}} = \left(\frac{C'_{xry}}{C_{xry}} \right)^2 \left[\frac{S^2{}_{C'_{xry}}}{(C'_{xry})^2} + \frac{S^2{}_{C_{xry}}}{(C_{xry})^2} \right] \tag{21}$$

where $S^2{}_{C_{xry}}$ is the variance of the annual estimated catch of species r in region x.

Estimation of Age Composition of Chinook Catch

Scale samples and length measurements were taken in a sub-sampling program during the interview process. Ages used in this report represent saltwater age of the fish.

The proportion of chinook at each age and month (P_{am}) was calculated as:

$$P_{am} = \frac{a_m}{n_m} \tag{22}$$

where a_m represents the number of fish observed at age a during month m, and n_m is the total number of fish bio-sampled in that month.

The variance of each proportion was calculated as:

$$S^2{}_{am} = \frac{P_{am}(1 - P_{am})}{n_m} \tag{23}$$

The catch at age of chinook in each month was calculated as:

$$C_{am} = P_{am} C_m \tag{24}$$

where C_m is the estimated catch of chinook salmon in a given month m.

The variance of the catch at age estimate was calculated as:

$$S^2_{Cam} = P^2_{am} S^2_{Cm} + C^2_m S^2_{Pam} + S^2_{Cm} S^2_{Pam} \tag{25}$$

where S^2_{Cm} is the variance of the month catch estimate C_m.

The annual catch at age was calculated as:

$$C_{ay} = \sum_m C_{am} \tag{26}$$

with a variance:

$$S^2_{Cay} = \sum_m S^2_{Cam} \tag{27}$$

The annual proportion at age (weighted by monthly catch) was calculated as:

$$P_{ay} = \frac{C_{ay}}{C_y} \tag{28}$$

with a variance:

$$S^2_{Pay} = \left(\frac{C_{ay}}{C_y} \right)^2 \left[\frac{S^2_{Cay}}{(C_{ay})^2} + \frac{S^2_{Cy}}{(C_y)^2} \right] \tag{29}$$

APPENDIX D-1. STRAIT OF GEORGIA FISHING EFFORT (NUMBER OF BOAT TRIPS) SUMMARY, 2001.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	5061	0	0	5061
Mar	STD	0	0	0	0	0	0	347	0	0	347
Apr	Estimate	531	274	104	416	1502	361	2519	405	694	6806
	STD	118	192	33	96	334	191	318	117	209	606
May	Estimate	498	376	239	879	1590	230	1646	477	602	6537
	STD	164	77	129	150	295	60	341	79	212	575
Jun	Estimate	6615	3335	736	2361	9611	1310	15649	1077	1646	42340
	STD	1997	647	192	352	987	167	2476	353	428	3465
Jul	Estimate	10522	7497	1338	4491	5985	1687	10007	2867	777	45171
	STD	1098	671	199	450	680	196	1012	280	178	1880
Aug	Estimate	14803	10123	732	3579	4502	4202	13638	1978	2741	56298
	STD	1094	1749	131	546	578	705	1122	312	658	2682
Sep	Estimate	7108	905	558	4474	4051	4143	5263	1419	1387	29308
	STD	617	398	316	555	663	197	1256	441	582	1880
Oct	Estimate	2164	815	0	0	0	0	991	0	0	3970
	STD	297	147	0	0	0	0	134	0	0	357
Nov -	Estimate	0	0	0	0	0	0	2423	0	0	2423
Dec	STD	0	0	0	0	0	0	621	0	0	621
Apr to	Estimate	40077	22510	3707	16200	27241	11933	48722	8223	7847	186460
Sep	STD	2610	2032	460	982	1552	801	3195	717	1037	5193
Yearly	Estimate	42241	23325	3707	16200	27241	11933	57197	8223	7847	197914
Total	STD	2627	2037	460	982	1552	801	3276	717	1037	5254

APPENDIX D-2. STRAIT OF GEORGIA CHINOOK CATCH SUMMARY, 2001.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	2668	0	0	2668
Mar	STD	0	0	0	0	0	0	469	0	0	469
Apr	Estimate	46	66	10	4	265	100	506	0	14	1011
	STD	34	108	5	6	101	81	146	0	17	226
May	Estimate	31	41	110	272	387	57	539	64	134	1635
	STD	17	13	87	99	100	20	139	43	87	239
Jun	Estimate	3243	491	151	456	2994	74	5030	186	555	13180
	STD	1309	152	76	123	393	24	1232	65	248	1870
Jul	Estimate	4543	1837	536	820	852	234	2213	588	100	11723
	STD	765	343	105	230	285	63	432	118	31	1026
Aug	Estimate	4589	2483	173	92	495	196	4425	139	274	12866
	STD	578	963	42	45	136	64	515	73	184	1262
Sep	Estimate	1133	103	117	113	11	1049	1262	379	531	4698
	STD	296	73	67	71	4	225	466	162	350	720
Oct	Estimate	5	20	0	0	0	0	97	0	0	122
	STD	6	13	0	0	0	0	65	0	0	67
Nov -	Estimate	0	0	0	0	0	0	1067	0	0	1067
Dec	STD	0	0	0	0	0	0	159	0	0	159
Apr to	Estimate	13585	5021	1097	1757	5004	1710	13975	1356	1608	45113
Sep	STD	1650	1042	175	291	524	257	1492	227	476	2602
Yearly	Estimate	13590	5041	1097	1757	5004	1710	17807	1356	1608	48970
Total	STD	1650	1042	175	291	524	257	1574	227	476	2649

APPENDIX D-3. STRAIT OF GEORGIA ADIPOSE-CLIPPED COHO CATCH SUMMARY, 2001.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jul	Estimate	0	4	0	0	52	0	410	638	58	1162
	STD	0	2	0	0	55	0	154	172	23	238
Aug	Estimate	1907	4242	78	4	529	0	309	117	60	7246
	STD	358	1036	24	2	260	0	94	70	43	1134
Sep	Estimate	1669	362	13	1	0	0	30	195	39	2309
	STD	354	264	19	1	0	0	42	107	44	459
Oct	Estimate	290	303	0	0	0	0	234	0	0	827
	STD	76	119	0	0	0	0	106	0	0	177
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Apr to	Estimate	3576	4608	91	5	581	0	749	950	157	10717
Sep	STD	503	1069	31	2	266	0	185	214	66	1246
Yearly	Estimate	3866	4911	91	5	581	0	983	950	157	11544
Total	STD	509	1076	31	2	266	0	213	214	66	1258

APPENDIX D-4. STRAIT OF GEORGIA CHUM CATCH SUMMARY, 2001.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jul	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Aug	Estimate	12	0	0	0	0	0	37	0	0	49
	STD	13	0	0	0	0	0	26	0	0	29
Sep	Estimate	325	16	13	1	0	0	0	0	0	355
	STD	100	22	19	1	0	0	0	0	0	104
Oct	Estimate	4152	0	0	0	0	0	2	0	0	4154
	STD	706	0	0	0	0	0	3	0	0	706
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Apr to	Estimate	337	16	13	1	0	0	37	0	0	404
Sep	STD	101	22	19	1	0	0	26	0	0	108
Yearly	Estimate	4489	16	13	1	0	0	39	0	0	4558
Total	STD	713	22	19	1	0	0	26	0	0	714

APPENDIX D-5. STRAIT OF GEORGIA PINK CATCH SUMMARY, 2001.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	10	0	0	0	0	0	209	0	0	219
	STD	10	0	0	0	0	0	196	0	0	196
Jul	Estimate	2560	20	0	0	0	19	11577	43	6	14225
	STD	950	13	0	0	0	10	2091	30	4	2297
Aug	Estimate	35235	1226	25	79	327	4456	31647	160	817	73972
	STD	3504	393	13	45	103	1061	3443	55	411	5059
Sep	Estimate	22687	285	15	11	89	1102	4360	106	49	28704
	STD	2921	177	19	13	56	433	2134	68	54	3649
Oct	Estimate	182	0	0	0	0	0	0	0	0	182
	STD	52	0	0	0	0	0	0	0	0	52
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Apr to	Estimate	60492	1531	40	90	416	5577	47793	309	872	117120
Sep	STD	4660	431	23	47	117	1146	4563	92	415	6650
Yearly	Estimate	60674	1531	40	90	416	5577	47793	309	872	117302
Total	STD	4660	431	23	47	117	1146	4563	92	415	6651

APPENDIX D-6. STRAIT OF GEORGIA SOCKEYE CATCH SUMMARY, 2001.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jun	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Jul	Estimate	510	0	0	0	0	5	410	0	1	926
	STD	448	0	0	0	0	4	175	0	2	481
Aug	Estimate	686	0	0	0	0	52	806	0	749	2293
	STD	261	0	0	0	0	38	186	0	490	587
Sep	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Oct	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Apr to	Estimate	1196	0	0	0	0	57	1216	0	750	3219
Sep	STD	518	0	0	0	0	38	255	0	490	759
Yearly	Estimate	1196	0	0	0	0	57	1216	0	750	3219
Total	STD	518	0	0	0	0	38	255	0	490	759

APPENDIX D-7. STRAIT OF GEORGIA CATCH SUMMARY FOR TOTAL SALMONIDS, 2001.

		Statistical Area									
Month		13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	2668	0	0	2668
Mar	STD	0	0	0	0	0	0	469	0	0	469
Apr	Estimate	46	66	10	4	265	100	506	0	14	1011
	STD	34	108	5	6	101	81	146	0	17	226
May	Estimate	31	41	110	272	387	57	539	75	137	1649
	STD	17	13	87	99	100	20	139	45	88	239
Jun	Estimate	3253	491	151	456	2994	74	5239	401	603	13662
	STD	1309	152	76	123	393	24	1268	253	265	1912
Jul	Estimate	7636	1881	536	820	904	258	15177	1582	194	28988
	STD	1538	345	105	230	290	65	2434	277	65	2940
Aug	Estimate	42541	8077	276	176	1350	4713	38141	437	1900	97611
	STD	3979	1832	61	64	379	1080	3953	123	813	6067
Sep	Estimate	25879	766	157	126	99	2151	5971	679	619	36447
	STD	3137	512	91	76	56	490	2761	241	380	4264
Oct	Estimate	4672	362	0	0	0	0	342	0	0	5376
	STD	750	124	0	0	0	0	122	0	0	770
Nov -	Estimate	0	0	0	0	0	0	1067	0	0	1067
Dec	STD	0	0	0	0	0	0	159	0	0	159
Apr to	Estimate	79386	11322	1240	1854	5999	7353	65573	3174	3467	179368
Sep	STD	5455	1942	191	296	637	1191	5552	465	942	8210
Yearly	Estimate	84058	11684	1240	1854	5999	7353	69650	3174	3467	188479
Total	STD	5506	1946	191	296	637	1191	5575	465	942	8261

APPENDIX D-8. STRAIT OF GEORGIA SUMMARY FOR TOTAL RELEASED SALMONIDS, 2001*.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	6750	0	0	6750
Mar	STD	0	0	0	0	0	0	997	0	0	997
Apr	Estimate	284	96	11	8	249	111	1050	35	705	2549
	STD	94	86	6	13	62	58	292	32	405	523
May	Estimate	117	182	128	65	2072	109	1042	193	981	4889
	STD	57	88	84	35	480	62	271	132	456	743
Jun	Estimate	4400	2412	262	256	8142	390	16704	1053	1083	34702
	STD	966	695	105	104	1157	169	5379	704	480	5697
Jul	Estimate	5376	6948	1933	1850	2950	1106	25638	4086	510	50397
	STD	774	841	329	819	735	258	4644	674	175	4975
Aug	Estimate	28894	20815	1558	766	8042	5163	42391	806	2637	111072
	STD	3746	4090	354	232	1397	3481	3681	278	865	7706
Sep	Estimate	24996	1597	1251	982	2246	4323	14184	1179	1063	51821
	STD	5610	904	719	567	594	1187	3674	521	764	7017
Oct	Estimate	2882	1921	0	0	0	0	898	0	0	5701
	STD	451	482	0	0	0	0	281	0	0	717
Nov -	Estimate	0	0	0	0	0	0	1862	0	0	1862
Dec	STD	0	0	0	0	0	0	335	0	0	335
Apr to	Estimate	64067	32050	5143	3927	23701	11202	101009	7352	6979	255430
Sep	STD	6859	4330	877	1029	2102	3692	8815	1148	1402	12910
Yearly	Estimate	66949	33971	5143	3927	23701	11202	110519	7352	6979	269743
Total	STD	6874	4357	877	1029	2102	3692	8882	1148	1402	12972

*Includes chinook, coho, chum, pink, sockeye, steelhead and cutthroat trout.

APPENDIX D-9. STRAIT OF GEORGIA HALIBUT CATCH SUMMARY, 2001.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	4	0	0	0	0	0	29	0	0	33
	STD	3	0	0	0	0	0	13	0	0	13
May	Estimate	0	0	0	0	0	0	68	0	0	68
	STD	0	0	0	0	0	0	44	0	0	44
Jun	Estimate	21	32	0	0	0	0	54	0	0	107
	STD	28	39	0	0	0	0	38	0	0	61
Jul	Estimate	0	10	0	0	0	0	0	0	0	10
	STD	0	9	0	0	0	0	0	0	0	9
Aug	Estimate	0	0	0	0	54	0	23	0	0	77
	STD	0	0	0	0	59	0	28	0	0	65
Sep	Estimate	0	0	0	0	0	0	43	0	0	43
	STD	0	0	0	0	0	0	34	0	0	34
Oct	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
Nov -	Estimate	0	0	0	0	0	0	0	0	0	0
Dec	STD	0	0	0	0	0	0	0	0	0	0
Apr to	Estimate	25	42	0	0	54	0	217	0	0	338
Sep	STD	28	40	0	0	59	0	74	0	0	107
Yearly	Estimate	25	42	0	0	54	0	217	0	0	338
Total	STD	28	40	0	0	59	0	74	0	0	107

APPENDIX D-10. STRAIT OF GEORGIA LINGCOD CATCH SUMMARY, 2001.

Month		Statistical Area 13	14	15	16	17	18	19	28	29	Total
Jan -	Estimate	0	0	0	0	0	0	0	0	0	0
Mar	STD	0	0	0	0	0	0	0	0	0	0
Apr	Estimate	0	0	0	0	0	0	0	0	0	0
	STD	0	0	0	0	0	0	0	0	0	0
May	Estimate	0	0	0	0	2	1	5	0	0	8
	STD	0	0	0	0	2	1	6	0	0	6
Jun	Estimate	717	0	110	621	685	230	503	72	35	2973
	STD	253	0	44	167	109	125	266	51	24	442
Jul	Estimate	327	230	12	616	1023	178	88	52	14	2540
	STD	156	109	4	260	311	62	41	31	6	455
Aug	Estimate	319	921	1	646	292	131	236	98	58	2702
	STD	106	430	1	166	95	59	84	68	25	499
Sep	Estimate	99	0	0	0	132	26	79	29	2	367
	STD	57	0	0	0	56	16	61	34	1	107
Oct	Estimate	0	0	0	0	0	0	5	0	0	5
	STD	0	0	0	0	0	0	6	0	0	6
Nov -	Estimate	0	0	0	0	0	0	3	0	0	3
Dec	STD	0	0	0	0	0	0	3	0	0	3
Apr to	Estimate	1462	1151	123	1883	2134	566	911	251	109	8590
Sep	STD	321	444	44	351	348	152	289	97	35	814
Yearly	Estimate	1462	1151	123	1883	2134	566	919	251	109	8598
Total	STD	321	444	44	351	348	152	289	97	35	814

APPENDIX D-11. STRAIT OF GEORGIA ROCKFISH CATCH SUMMARY, 2001.

Month		Statistical Area									Total
		13	14	15	16	17	18	19	28	29	
Jan -	Estimate	0	0	0	0	0	0	665	0	0	665
Mar	STD	0	0	0	0	0	0	382	0	0	382
Apr	Estimate	774	78	39	232	314	103	771	59	43	2413
	STD	254	109	22	88	80	69	255	40	20	403
May	Estimate	905	57	14	487	86	101	641	377	46	2714
	STD	286	23	9	237	43	51	275	224	43	520
Jun	Estimate	4402	1184	518	2583	8117	191	2115	1094	417	20621
	STD	1263	666	199	599	1255	66	785	589	218	2242
Jul	Estimate	1597	3330	257	4370	1725	911	1173	514	461	14338
	STD	438	743	76	1840	634	225	385	210	167	2193
Aug	Estimate	2975	3040	71	4459	861	1219	1258	1816	990	16689
	STD	689	1413	33	976	209	491	245	638	622	2136
Sep	Estimate	2092	26	47	53	586	418	1349	812	87	5470
	STD	750	18	59	63	280	145	596	746	45	1258
Oct	Estimate	385	219	0	0	0	0	214	0	0	818
	STD	161	152	0	0	0	0	106	0	0	245
Nov -	Estimate	0	0	0	0	0	0	1276	0	0	1276
Dec	STD	0	0	0	0	0	0	1044	0	0	1044
Apr to	Estimate	12745	7715	946	12184	11689	2943	7307	4672	2044	62245
Sep	STD	1724	1733	225	2183	1452	570	1149	1186	683	4052
Yearly	Estimate	13130	7934	946	12184	11689	2943	9462	4672	2044	65004
Total	STD	1731	1740	225	2183	1452	570	1602	1186	683	4209

APPENDIX E-1. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR THE STRAIT OF GEORGIA*. Totals include data for all months surveyed.

		Salmon Catch						Salmon Released			Groundfish Catch				
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	All Salmon	Chinook	Coho	All Salmon	Halibut	Lingcod	Rockfish	Dogfish	Other
1980	510400	204100	393500	0	0	0	609200	0	0	0	0	0	0	0	0
1981	494604	197239	317091	0	0	0	572964	0	0	215556	0	51319	77889	2280	8633
1982	559395	124390	411686	0	2846	0	547196	0	0	578169	0	77035	176302	7214	43126
1983	574257	198433	404031	0	54852	0	668142	0	0	775502	0	73800	209099	4518	94100
1984	651090	369445	443590	0	10229	0	828290	0	0	639676	0	137492	158676	4649	84353
1985	628513	234838	728197	0	91246	0	1062939	0	0	703264	0	77103	134112	4680	58531
1986	582946	181896	571980	919	3145	918	760361	0	0	166862	0	70817	167783	5212	65081
1987	589731	121081	641572	3544	90004	8867	867029	0	0	1068027	0	65789	136270	4110	61497
1988	664517	119117	1084790	4802	8843	16376	1235680	0	0	935330	0	65929	194735	4114	71045
1989	603331	132846	497223	7819	123046	13356	775616	190186	0	1201306	0	52329	199898	3672	57165
1990	543368	111914	630033	2978	11549	30669	792440	221081	0	704554	0	31716	154858	2679	30016
1991	466749	115523	157111	5273	249662	23521	551521	178921	0	622445	0	8214	173383	4972	23469
1992	467559	116581	595554	5927	19085	6745	744564	165710	0	417401	0	5968	135763	1802	32146
1993	528508	127576	861323	3096	173143	23766	1217381	182111	0	526817	0	7239	104009	1907	35218
1994	461129	70839	294767	4279	18476	14054	410352	147571	0	418387	0	6885	162431	1244	35840
1995	323642	62173	86145	4023	183938	5897	347401	112324	0	317735	0	4829	112299	1884	32365
1996	289423	89589	127890	3474	7887	2419	233469	180238	0	366379	0	3733	102818	1497	39786
1997	268797	56332	104953	1761	111124	16887	293605	65421	0	404166	0	4086	87453	2528	52088
1998	162296	20923	1376	3624	6848	4474	38449	34786	20992	2340	2203	3291	84251	0	43565
1999	164282	43588	478	4404	27845	492	76808	60423	14000	105792	2489	3691	67256	0	13937
2000	170798	32750	4678	2558	9772	6367	56130	57896	37865	148224	543	6127	54881		165
2001	197914	48970	14107	4558	117302	3219	188479	61066	125055	262993	338	8598	65004		157

"0" indicates that no catch estimates were generated

*SOURCE: Catch statistics 1980-1993 from unpublished creel survey data.

APPENDIX E-2. TIDAL EFFORT STATISTICS AND SPORT CATCH ESTIMATES OF CHINOOK AND COHO FOR THE STRAIT OF GEORGIA, 1960 TO 1982*.

Year	Effort** (boat trips)	Catch	
		Chinook	Coho
1960	189,150	83,000	238,000
1961	199,935	63,000	152,000
1962	205,547	86,000	167,000
1963	247,590	65,000	199,000
1964	198,120	51,000	182,000
1965	250,020	53,000	175,000
1966	259,100	80,000	249,000
1967	254,500	115,000	200,000
1968	265,030	150,000	250,000
1969	281,475	185,000	200,000
1970	306,255	220,000	500,000
1971	341,123	255,000	800,000
1972	300,349	287,000	335,000
1973	293,141	272,000	373,000
1974	443,441	269,000	772,000
1975	334,490	398,000	454,000
1976	340,729	490,000	415,000
1977	363,350	372,000	682,000
1978	369,035	500,000	1,103,000
1979	404,710	350,000	708,735
1980	510,400	204,100	393,500
1981	494,604	197,239	317,091
1982	559,395	124,390	411,686

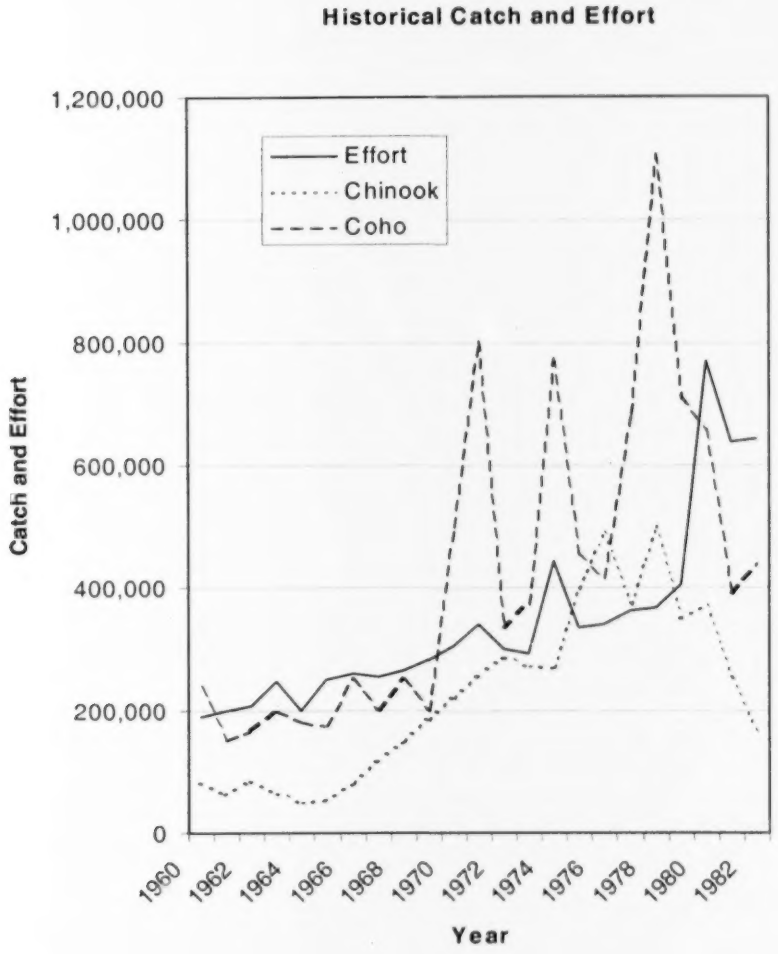
*SOURCE: Coho catch statistics: 1960-1978 from Argue et al. (1983); 1979 from R. Kadowaki (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.); 1980-1982 from unpublished creel survey data.

Chinook catch statistics: 1960-1977 from Argue et al. (1983); 1978 and 1979 from B. Riddell (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.) following the methods of Argue et al . (1983); 1980-1982 from unpublished creel survey data.

Effort statistics: 1960-1979 from published and unpublished Fisheries Officer statistics; 1980-1982 from unpublished creel survey data.

**Effort prior to 1980 (the start of the creel survey) may not represent boat trips.

APPENDIX E-3. STRAIT OF GEORGIA HISTORICAL CATCH* AND EFFORT** GRAPH, 1960 TO 1982.



*SOURCE: Coho catch statistics: 1960-1978 from Argue et al. (1983); 1979 from R. Kadowaki (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.); 1980-1982 from unpublished creel survey data.
Chinook catch statistics: 1960-1977 from Argue et al. (1983); 1978 and 1979 from B. Riddell (Fisheries and Oceans Canada, Pacific Bio. Stn. Nanaimo, B.C. pers. comm.) following the methods of Argue et al . (1983); 1980-1982 from unpublished creel survey data.
Effort statistics: 1960-1979 from published and unpublished Fisheries Officer statistics; 1980-1982 from unpublished creel survey data.
**Effort prior to 1980 (the start of the creel survey) may not represent boat trips.

APPENDIX F. HISTORICAL REGULATION CHANGES AFFECTING THE STRAIT OF GEORGIA AND NORTHERN VANCOUVER ISLAND SPORT FISHERY*.

1981	July 1, chinook minimum size limit changed from 30 cm to 45 cm. Minor spot closures, E.g. River mouths only.
1982	Annual bag limit established at 30 chinook.
1985	May 15, daily limit reduced from 4 to 2 chinook. June 5, annual limit reduced from 30 to 20 chinook. Spot closure plan implemented (32 closures), similar program continues to present day.
1988	April 1, annual bag limit reduced to 8 chinook. A proposed chinook minimum size limit of 62 cm (not enforced).

The Strait of Georgia has been divided into 2 areas: 1. Victoria area, Cadboro Bay to Sheringham Point. 2. The rest of the Strait of Georgia.

1989	Feb 1, 62 cm minimum size limit for chinook. Aug 16, Victoria area, minimum size limit for chinook reduced to 45 cm and the annual limit increased to 20 fish. Strait of Georgia, chinook size limit of 62 cm and an increase in annual limit to 15 fish.
1992	Feb 6, daily limit for lingcod reduced to 1 and minimum size limit of 65 cm established.
1994	Daily possession limit for coho reduced from 4 to 2, minimum size limit increased from 30 cm to 41cm. Annual limit of 10 lingcod.
1998	July 1, barbless hooks in tidal waters. May 4, non-retention of coho in all tidal and non-tidal waters (some exceptions). Creation of Red zones (no fishing) and Yellow zones (fishing allowed). Spot closures for sockeye.
2001	August 1, daily limit of 2 hatchery coho in Statistical Areas 13 and 14.

*__SOURCE__: regulation changes 1981 and 1982, English et al. (1986); 1985 T. F. Shardlow, et al. (1989); 1988 T. F. Shardlow, et al. (1989); 1989 L. D. Collicutt et al. (1990); 1992, 1994 Wendy Grider (Fisheries and Oceans Canada, Vancouver, B.C. pers. comm).

APPENDIX G. SPECIES BREAK DOWN OF FISH COMMONLY INCLUDED WITH OTHER GROUNDFISH.

Common Names	
Pacific Cod	*gadus macrocephalus*
Pacific Tomcod	*Microgadus proximus*
Walleye Pollock	*Theragra chalcogramma*
Pacific Hake	*Merluccius productus*
Perch (all species)	Family *Scorpaenidae*
Greenlings (all species)	Family *Hexagrammidae*

APPENDIX H. TOTAL ESTIMATED EFFORT AND SPORT CATCHES FOR NORTHERN VANCOUVER ISLAND (totals include data for all months sampled).

		Salmon Catch						Total Salmon Release		Groundfish Catch				Total
Year	Effort	Chinook	Coho	Chum	Pink	Sockeye	Total Salmon	Chinook	Coho	Halibut	Lingcod	Total Rockfish	Other	Finfish Catch
*1998	16408	2366		850	15004	440	18660	6691	30857	3652	1521	12010	248	36091
*1999	39151	7813	430	607	52359	1538	62743	6844	34829	6713	2056	19354	143	91145
*2000	15934	4628	125	103	23519	744	29172	4904	9626	1524	1066	8959	0	44845
*2001	10825	3759	126	59	11967	43	15953	42164	1796	24570	0	8959	0	31626

*1998 and 1999 Access point creel survey catch estimates are for July, August and Sept.
*2000 and 2001 Access point creel survey catch estimates are for July and August.

APPENDIX I. SALMON CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2001.

Month	Sub Area		Catch								Released		
					Not Checked	Hatchery	Wild			Total	Chinook	Coho	All Salmon
		Effort	Chinook	Chum	Coho	Coho	Coho	Pink	Sockeye	Salmon			
7	A	Catch	2226	1147	0	0	34	34	0	0	1215	2840	10227	13134
7	A	STD	508	416	0	0	41	41	0	0	440	1493	2267	3043
7	B	Catch	1902	714	46	0	0	0	209	0	969	1178	3985	5247
7	B	STD	463	245	39	0	0	0	94	0	304	406	1037	1310
7	C	Catch	1964	639	13	0	0	15	272	0	939	449	2211	2673
7	C	STD	263	171	14	0	0	15	83	0	208	133	389	448
7	E	Catch	0	0	0	0	0	0	0	0	0	0	0	0
7	E	STD	0	0	0	0	0	0	0	0	0	0	0	0
8	A	Catch	1463	402	0	0	0	0	3543	0	3944	531	5910	7716
8	A	STD	548	197	0	0	0	0	1466	0	1621	240	2248	2616
8	B	Catch	2053	539	0	26	0	0	4984	26	5575	833	8473	11137
8	B	STD	663	222	0	30	0	0	1735	19	1921	300	2730	3176
8	C	Catch	1146	299	0	17	0	0	2788	17	3121	475	4733	6235
8	C	STD	249	96	0	17	0	0	696	10	763	132	1069	1248
8	E	Catch	71	19	0	0	0	0	171	0	190	26	293	380
8	E	STD	0	6	0	0	0	0	28	0	30	7	34	43
Total		Catch	10825	3759	59	43	34	49	11967	43	15953	6332	35832	46522
		STD	1159	600	41	34	41	44	2379	21	2689	1605	4474	5447

APPENDIX J. GROUNDFISH CATCHES AND EFFORT BY MONTH AND STATISTICAL SUB-AREA FOR NORTHERN VANCOUVER ISLAND, 2001.

Month	Sub Area		Effort	Catch		
				Halibut	Lingcod	Rockfish
7	A	Catch	2226	541	371	1925
7	A	STD	508	267	194	994
7	B	Catch	1902	59	125	547
7	B	STD	463	33	71	283
7	C	Catch	1964	28	43	55
7	C	STD	263	20	25	29
7	E	Catch	0	0	0	0
7	E	STD	0	0	0	0
8	A	Catch	1463	72	143	975
8	A	STD	548	68	86	482
8	B	Catch	2053	76	186	1351
8	B	STD	663	68	93	553
8	C	Catch	1146	40	102	754
8	C	STD	249	32	43	242
8	E	Catch	71	3	7	47
8	E	STD	0	3	3	14
	Total	Catch	10825	819	977	5654
		STD	1159	288	247	1291